

PROPORTIONAL PRESSURE REGULATORS

PRINCIPLE	DESCRIPTION	ACCURACY max.	PRESSURE RANGE bar	CONNECTION	SERIES	SEITE
CONTROL VALVE	on PCB	± 0.2 %	0 ... 0.005 / 10	G $\frac{1}{8}$	PM	10.02
high accuracy	falling characteristic	± 0.2 %	0 ... 0.005 / 35	G $\frac{1}{8}$	PQ1	10.04
	with double loop	± 0.2 %	0 ... 0.005 / 35	G $\frac{1}{8}$	PQ2	10.05
	up to 2000 l/min	± 0.25 %	0 ... 0.1 / 35	¼"NPT - ¾"NPT	PQ3...PQ6	10.07
PROPORT. MAGNET	proven, many options	± 0.5 %	0 ... 0.1 / 1	G $\frac{1}{8}$ - G1	PR	10.09
very robust	for flow applications	± 0.5 %	0 ... 6 / 50	G $\frac{3}{8}$	PF	10.12
	digital control, also SST	± 0.5 %	0 ... 0.1 / 50	G $\frac{1}{8}$ - G1	PP	10.17
	programmable	± 0.5 %	0 ... 1 / 12	G $\frac{1}{8}$ - G $\frac{3}{8}$	PD	10.19
WITHOUT ELECTRIC	PWM-controlled	< 1%	0 ... 6 / 16	G $\frac{1}{4}$ - G1	PG	10.13
FLAPPER/NOZZLE	integrated booster, ATEX	± 0.5 %	0.2 ... 1 / 8	¼"NPT	PT6	10.24
highly sensitive						
PIEZO-OPERATED	high accurate, ATEX	± 0.25 %	0.2 ... 1 / 8	¼"NPT	PT7	10.25
very fast	minimal power consumption	± 0.2 %	0 ... 0.2 / 16	G $\frac{1}{8}$ a. G $\frac{1}{4}$	PRE	10.14
MOTORISED REGUL.	failfreeze	± 1 %	0.14 ... 1.8 / 8	¼"NPT	P180	10.27
HIGH PRESSURE	proportional magnet	± 0.5 %	0 ... 30 / 50	G $\frac{1}{4}$	PP0	10.17
	control valves	± 0.5 %	0 ... 40 / 70	G $\frac{1}{8}$	PQH	10.21
	proportional magnet	± 3 %	0 ... 30 / 80	G $\frac{1}{4}$	PHP	10.23
ATEX	control valves	± 1 %	0 ... 2 / 6	G $\frac{1}{8}$	PCEX	10.20
	flapper nozzle	± 0.5 %	0.2 ... 1 / 8	¼"NPT	PT6	10.24
	piezo-operated	± 0.25 %	0.2 ... 1 / 8	¼"NPT	PT7	10.25
VACUUM	on PCB	± 0.2 %	-1 ... 0 / + 1	G $\frac{1}{8}$	PM	10.02
	control valves	± 0.2 %	-1 ... 0 / + 1	G $\frac{1}{8}$	PQ1	10.04
	with double loop	± 0.2 %	-1 ... 0 / + 1	G $\frac{1}{8}$	PQ2	10.05
	proportional magnet	± 0.5 %	-1 ... 0 / + 1	G $\frac{1}{8}$ - G1	PR	10.09
	piezo-operated	± 0.2 %	-1 ... 1 / +10	G $\frac{1}{8}$ a. G $\frac{1}{4}$	PRE	10.14
	digital control	± 0.5 %	-1 ... 0	G $\frac{1}{8}$ - G1	PP	10.17
IO-LINK	digital control	± 1.5 %	0 ... 3 / 10	G $\frac{1}{4}$ - G $\frac{1}{2}$	PIO	10.26
SETPOINT	with 10-speed-potentiometer				PPB	10.28
BOOSTER/PROP.-VENTIL-KOMB.	normal loop				BP1	10.30
	with double loop				BP2	10.31



10

Description

Media

Fail freeze

Second loop

Supply voltage

Impedance

Monitor signal

Electrical connection

Power consumption

Linearity / Hysteresis

Temperature influence

Temperature range

Material

Proportional pressure regulator with closed loop control technology for better control of pressurised gases. The instrument can be built as single closed loop or dual closed loop control valve.

dry, lubricated or unlubricated and 5 µm filtered compressed air or non-corrosive gases

constant outlet pressure at voltage drop

0 ... 10 V, impedance 4.7 kΩ,

15 ... 24 V DC, residual ripple < 10%, with reverse voltage protection

0 ... 10 V / 4.7 kΩ, 4 ... 20 mA / 100 Ω,

0 ... 10 V at max. 10 mA

terminal strip for 2.5 mm²

3.6 W regulating, 0.5 W non-regulating

< 0.15% FS

< 1% FS at 0 °C to 50 °C / 32 °F to 122 °F

0 °C to 70 °C / 32 °F to 158 °F

Ports:

brass

Transducer: aluminium and silicon

Air consumption

Repeatability

Adjustment

Mounting position

Elastomer:

Valves:

without constant bleed

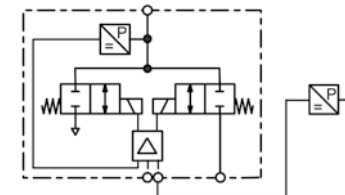
< 0.02 FS

zero point and span

any, vibration-resistant

FKM

nickel-plated brass



with single or double loop

Dimensions			Flow rate	Supply pressure	Accuracy	Connection thread	Pressure range	Order number	E*
A	B	C	l/min*1	max. mbar/bar	%	G	mbar/bar		
mm	mm	mm							

Proportional press. regulator

0-10 V input and monitor signal, supply voltage 24 V DC, fail freeze, single loop for DIN rail

PM

56	78	54	35	10 mbar	0.2	G1/8	0 ... 5 mbar	PM1DE-A5
				20 mbar			0 ... 10 mbar	PM1DE-B1
				200 mbar			0 ... 100 mbar	PM1DE-C1
				1 000 mbar			0 ... 600 mbar	PM1DE-C6
56	78	54	35	2 bar	0.2	G1/8	0 ... 1 bar	PM1DE-01
				3 bar			0 ... 2 bar	PM1DE-02
				9 bar			0 ... 4 bar	PM1DE-04
				9 bar			0 ... 6 bar	PM1DE-06
				15 bar			0 ... 10 bar	PM1DE-10
56	78	54	35	2 bar	0.2	G1/8	0 ... -1 bar	PM1DE-V0
				2 bar			-1 ... +1 bar	PM1DE-V1

Special options, add the appropriate letter

double loop

4-20 mA

flow 100 l/min

panel mounting

mounting for manifolds

second loop feedback 0 ... 10 V
supply signal, jumper selectable command
increased flow rate
on plane level
connections downwards

PM2

PM . . I . .

PM HF

PM . P . . .

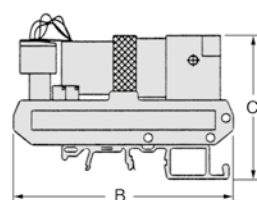
PM . M . . .

Accessories, enclosed

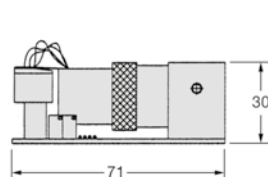
manifold block

for 2 to 7 valves

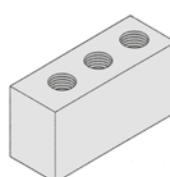
number of valves added to order number **SBM-**



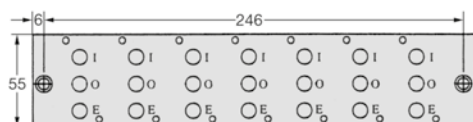
PM . D for DIN rail



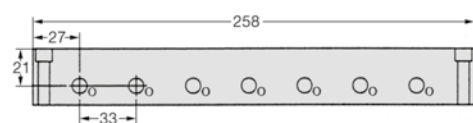
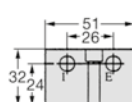
PM . P for panel mounting



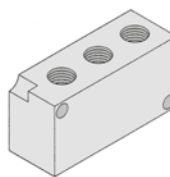
PM . D for DIN rail



PM . M for manifold block



manifold block for 2 to 7 valves



PM . P for panel mounting



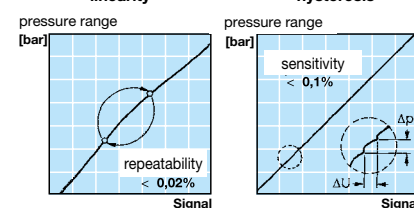
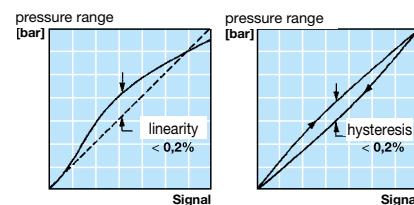
PM . D
DIN rail mounting



PM . P
panel mounting



PM . M
mounting on manifold block



* Product group

*1 at 7 bar supply pressure and open outlet, at regulated flow rate of 3 l/min
*2 higher supply pressures on request

For further details about double loop see PQ2

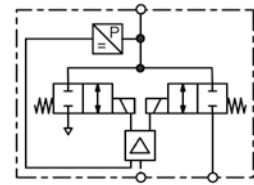
PDF CAD
www.aircom.net



Order example:
PM1DE-A5

Technical features

• Pressure range	0 ... 10 mbar up to 0 ... 35 bar	• Linearity	± 0.15% FS
• Input signal	0 ... 10 V and 4 ... 20 mA	• Hysteresis	± 0.15% FS
• Security	constant outlet pressure at voltage drop	• Response sensitivity	< 0.1% FS
• Response time	10 to 15 ms	• Repeatability	± 0.02% FS
• Adjustment	zero point and span	• Protection class	IP 65
• Sensitivity	immune to shock and vibration up to 25 g	• Air consumption	without constant bleed



accurate to 0.2%

General technical features

Description	Two solenoid valves control the system pressure. One valve is for inlet control, the other for outlet control. A strain gauge pressure transducer measures system pressure and provides a feedback signal to the electronic controls. Any difference between command and feedback signals causes one of the solenoid valves to open, causing system pressure to increase or decrease.		
Mounting position	any, immune to shock and vibration up to 25 g		
Protection class	IP 65 housing		
Temperature range	-5 °C to 70 °C / 23 °F to 158 °F		
Material	Body: aluminium	Elastomer: FKM	
	Transducer: aluminium and silicon	Valves: nickel-plated brass	

Pneumatic features

Media	dry, unlubricated and 5 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart, minimum 10% above outlet pressure
Flow rate	35 l/min at 7 bar supply pressure and open outlet, optionally 100 l/min 3 l/min at controlled outlet pressure
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without constant bleed, Option X58: < 2 l/min

Electrical features

Supply voltage	15 ... 24 V DC, reverse voltage protection existing
Power consumption	3.6 W for regulation, 0.5 W non-regulating
Signal range	0 ... 10 V, optionally 4 ... 20 mA
Impedance	4.7 kΩ at voltage signal, 100 Ω at current signal 10 kΩ at voltage signal, 100 Ω at current signal, for external feedback
Monitor signal impedance	> 4.7 kΩ at voltage signal, < 100 Ω at current signal
Electrical connector	plug M16x0.75, 7-pin, with coupling socket
Monitor signal	0 ... 10 V, optionally 4 ... 20 mA
Security	constant outlet pressure at voltage drop

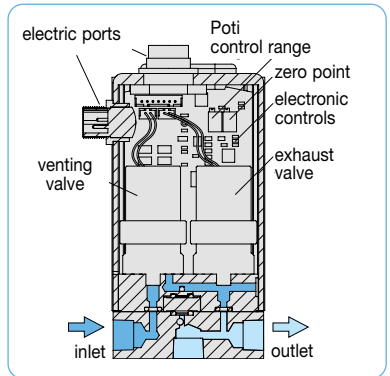
Accuracy

Linearity/Hysteresis	± 0.15% FS
Response sensitivity	< 0.1% FS
Response time	10 to 15 ms
Repeatability	± 0.02% FS
Temperature influence	< 0.01% FS per °C/K at 0 °C to 50 °C / 32 °F to 122 °F < 1.00% FS per °C/K at 50 °C to 70 °C / 122 °F to 158 °F
Accuracy over all	± 0.2 % FS
Regulating time	< 2 s to fill 0.1 l volume to 90% of the initial pressure (or to exhaust) < 40 s to fill 2 l volume to 90% of the initial pressure (< 80 s to exhaust)

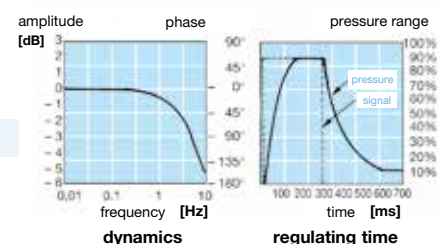
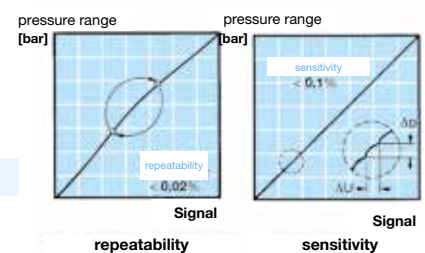
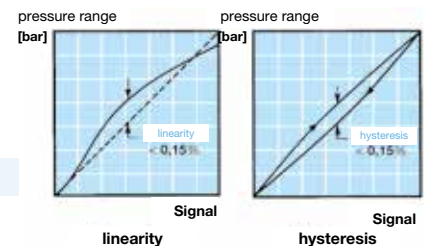
Adjustment

Zero point	The zero point can be increased by up to 20% of full scale, e.g. from 0 bar to 1.2 bar at a 6 bar regulator. External adjustment via potentiometer Z "zero".
Span	The maximum pressure value of the control range can be reduced by up to 20% depending on the selected pressure range, e.g. from 6 to 4.8 bar. External adjustment via potentiometer S "span".

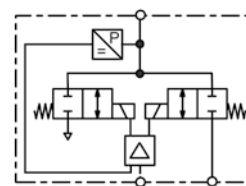
*1 at 7 bar supply pressure and 3 bar outlet pressure



cross-section PQ



Description	The pneumatic proportional pressure regulator produces outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system consisting of valves, manifold, housing and electronic controls.
Single loop	Pressure is controlled by two solenoid valves. One valve functions as inlet control, the other as exhaust. The pressure outlet is measured by an internal pressure transducer which provides a feedback signal to the electronic controls. This feedback signal is compared with the command input signal. Any difference between the two signals causes one of the two solenoid valves to open, allowing flow into or out of the system. Accurate pressure is maintained by these two valves.
Accuracy	Linearity / Hysteresis: $\pm 0.15\%$ FS Response sensitivity: $< 0.1\%$ FS Repeatability: $\pm 0.02\%$ FS Accuracy over all: $\pm 0.2\%$ FS



G $\frac{1}{8}$
0 ... 10 mbar/35 bar

Dimensions			Flow rate	Supply pressure	Accuracy	Connection thread	Pressure range	Order number
A	B	C	l/min*1	max. mbar/bar*2	%	G	mbar/bar	
mm	mm	mm						

Single loop regulator				0 ... 10 V input and feedback signal, supply voltage 24 V DC, 35 l/min*1, with coupling socket				PQ1
51	106	8	on request	10 mbar	0.2	G $\frac{1}{8}$	0 ... 5 mbar	PQ1EE-A5
				20 mbar			0 ... 10 mbar	PQ1EE-B1
				40 mbar			0 ... 20 mbar	PQ1EE-B2
				100 mbar			0 ... 50 mbar	PQ1EE-B5
				200 mbar			0 ... 100 mbar	PQ1EE-C1
				400 mbar			0 ... 200 mbar	PQ1EE-C2
				800 mbar			0 ... 400 mbar	PQ1EE-C4
				1000 mbar			0 ... 600 mbar	PQ1EE-C6
51	106	8	35	2 bar	0.2	G $\frac{1}{8}$	0 ... 1 bar	PQ1EE-01
				3 bar			0 ... 2 bar	PQ1EE-02
				7 bar			0 ... 4 bar	PQ1EE-04
				7 bar			0 ... 6 bar	PQ1EE-06
				9 bar			0 ... 8 bar	PQ1EE-08
				15 bar			0 ... 10 bar	PQ1EE-10
				15 bar			0 ... 12 bar	PQ1EE-12
				24 bar			0 ... 16 bar	PQ1EE-16
				24 bar			0 ... 20 bar	PQ1EE-20
				38 bar			0 ... 25 bar	PQ1EE-25
				38 bar			0 ... 30 bar	PQ1EE-30
				38 bar			0 ... 35 bar	PQ1EE-35
51	106	8	35	0 bar	0.2	G $\frac{1}{8}$	0 ... -1 bar	PQ1EE-V0
				2 bar			-1 ... +1 bar	PQ1EE-V1



PQ1

Special options, add the appropriate letter or number

4-20 mA	input and monitor signal	PQ1 IC-...
flow 100 l/min	increased flow rate, max. 10 bar, not combinable with Opt. ...X58	PQ1HF
continuous regulation*3	improved characteristic curve through proportional inlet valve, max. 10 bar	PQ1X58
declining curve	inverted outlet	PQ1X59

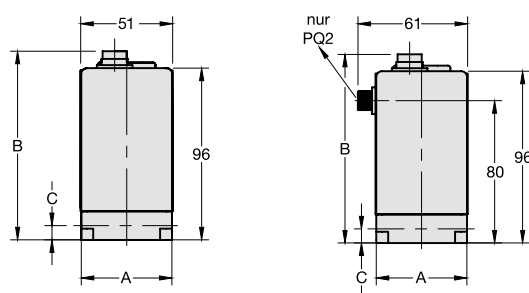
Accessories, enclosed

coupling socket	M16x0,75, 7-pin with 2 m cable	straight	PRK-A2L
		angular	PRK-C2L
mounting bracket	made of steel		PQKT-01

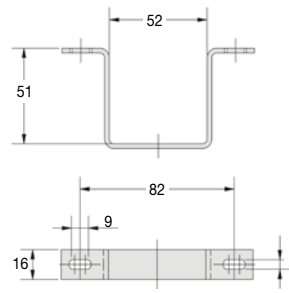


PRK-A

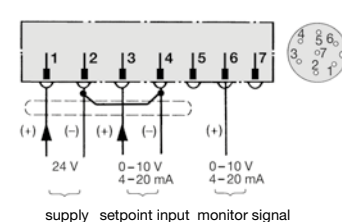
PRK-C



PQ1 und PQ2



PQKT-01



connection diagram for supply and signal

*1 at 7 bar supply pressure and open outlet, at regulated flow rate of 3 l/min
 *2 higher supply pressure on request
 *3 air consumption

Technical details: see previous page

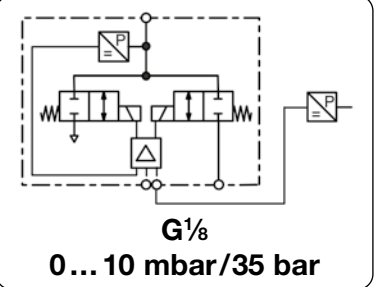
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* Product group



Order example:
 PQ1EE-A5

Description	The pneumatic proportional pressure regulator produces outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system consisting of valves, manifold, housing and electronic controls.
Double loop	The servo valve expands in single loop operation by combining an additional feedback from an external sensing device with the internal transducer. The external sensor provides information on the control status. The PQ2 then compares the command signal with the second loop feedback signal. Should there be a difference in the signal comparisons, the servo valve will make adjustments to the internal loop to bring the system into balance. This provides accurate final outlet. The acceptance of electrical feedback from an external sensor enables precise control of conditions such as pressure, force, torque, position or flow.
External pressure transducer	Any pressure transducer for 0-10 V and 4-20 mA output signal and suitable for 15-24V DC supply voltage can be applied. An appropriate coupling socket plus cable is required.



Dimensions			Flow rate	Supply pressure	Accuracy	Connection thread	Pressure range	Order number
A	B	C	l/min*1	max. mbar/bar*2	%	G	mbar/bar	
mm	mm	mm						

Double loop regulator			0 ... 10 V input / feedback / second loop signal, supply voltage 24 V DC, 35 l/min*1, with both coupling sockets			PQ2		
51	106	8	on request	10 mbar	0.2	G $\frac{1}{8}$	0 ... 5 mbar	PQ2EE-A5
				20 mbar			0 ... 10 mbar	PQ2EE-B1
				40 mbar			0 ... 20 mbar	PQ2EE-B2
				100 mbar			0 ... 50 mbar	PQ2EE-B5
				200 mbar			0 ... 100 mbar	PQ2EE-C1
				400 mbar			0 ... 200 mbar	PQ2EE-C2
				800 mbar			0 ... 400 mbar	PQ2EE-C4
				1 000 mbar			0 ... 600 mbar	PQ2EE-C6
51	106	8	35	2 bar	0.2	G $\frac{1}{8}$	0 ... 1 bar	PQ2EE-01
				3 bar			0 ... 2 bar	PQ2EE-02
				7 bar			0 ... 4 bar	PQ2EE-04
				7 bar			0 ... 6 bar	PQ2EE-06
				9 bar			0 ... 8 bar	PQ2EE-08
				15 bar			0 ... 10 bar	PQ2EE-10
				15 bar			0 ... 12 bar	PQ2EE-12
				24 bar			0 ... 16 bar	PQ2EE-16
				24 bar			0 ... 20 bar	PQ2EE-20
				38 bar			0 ... 25 bar	PQ2EE-25
				38 bar			0 ... 30 bar	PQ2EE-30
				38 bar			0 ... 35 bar	PQ2EE-35
51	106	8	35	0 bar	0.2	G $\frac{1}{8}$	0 ... -1 bar	PQ2EE-V0
				2 bar			-1 ... +1 bar	PQ2EE-V1



PQ2



combination example:
booster with proportional pressure regulator and second loop via pressure transducer

Special options, add the appropriate letter or number

4-20 mA	input / feedback / second loop signal	PQ2 IC- . .
flow 100 l/min	increased flow rate, max. 10 bar	PQ2HF
continuous regulation*3	improved characteristic curve through proportional inlet valve, max. 10 bar	PQ2X58
declining curve	inverted outlet	PQ2X59

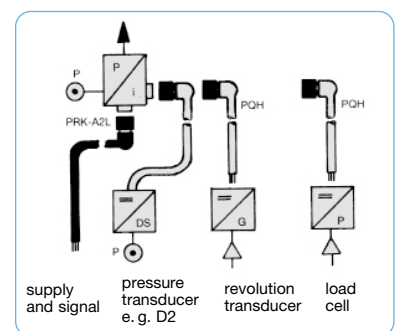
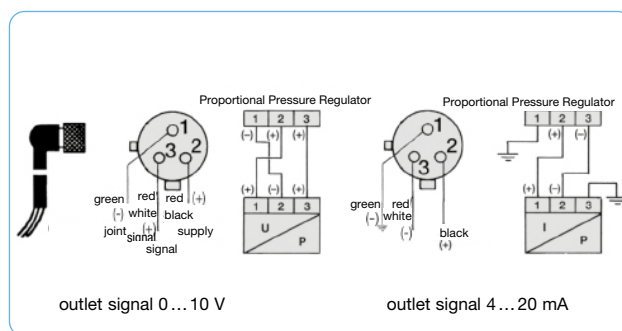
Accessories, enclosed

coupling socket	M16x0.75, 7-pin with 2.0 m cable, supply and signal, straight	PRK-A2L
coupling socket	1/2" UNF, 3-pin with 0.9 m cable, for second loop, angular	PRK-C2L
coupling socket	1/2" UNF, 3-pin with 0.9 m cable, for second loop, straight	PQH-L1
coupling socket	1/2" UNF, 3-pin with 0.9 m cable, for second loop, angular	PQH-L2
mounting bracket	made of steel	PQKT-01



PRK-A

PRK-C

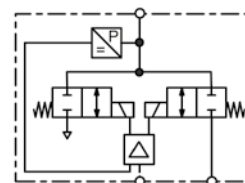


*1 at 7 bar supply pressure and open outlet, at regulated flow rate of 3 l/min
*2 higher supply pressures on request
*3 air consumption

PROPORTIONAL PRESSURE REGULATOR WITH HIGH ACCURACY AND HIGH FLOW PQ3...PQ6

Technical features

• Pressure range	-1... 35 bar	• Accuracy	$\pm 0.4\%$
• Input signal	0-10 V; 4-20 mA	• Mounting position	any
• Protection class	IP65	• Adjustment	zero point, span, hysteresis
• Response time	15 ... 20 ms	• Air consumption	without air consumption
• Power consumption	6 W		



accurate 0.4%

General technical features

Description	Two solenoid valves control the system pressure. One valve is for inlet control, the other for outlet control. In order to achieve high volume flow the regulator is pilot-controlled, i.e. the valves control an integral volume booster. Extraordinary accuracy is reached by measuring the outlet pressure of the booster and feeding back the according signal.		
Mounting position	any, preferably upright		
Protection class	IP65		
Temperature range	0 °C to 70 °C / 32 °F to 158 °F		
Material	Booster body: nickel-plated aluminium	Elastomer: FKM, NBR/Buna-N	
	Transducer: aluminium and silicon	Valves: nickel-plated brass	

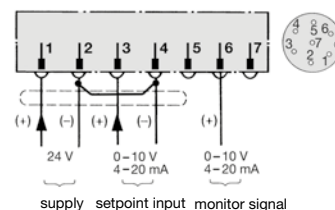


Pneumatic features

Media	dry, unlubricated and 40 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart, minimum 10% above outlet pressure
Flow rate	PQ3: 700 l/min at 8 bar supply pressure and 6 bar outlet pressure PQ4 / PQ6: 2000 l/min at 8 bar supply pressure and 6 bar outlet pressure
Exhaust	nearly same relief capacity as ventilation capacity
Air consumption	without constant bleed

Electrical features

Supply voltage	15-24 V DC
Power consumption	max. 6 W
Command signal	0-10 V, optionally 4-20 mA
Command signal impedance	10 kΩ at voltage signal, 100 Ω at current signal
Electrical connector	plug M16x0.75, 7-pin, with coupling socket
Monitor signal	0-10 V, optionally 4-20 mA
Security	constant outlet pressure at voltage drop



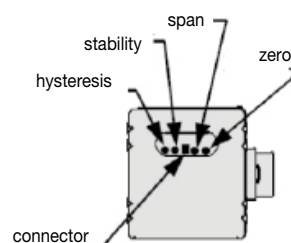
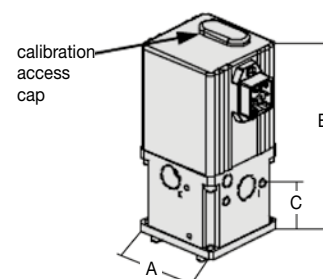
connection diagram for supply and signal

Accuracy

Linearity / Hysteresis	$\pm 0.3\%$ FS > 7 bar outlet pressure $\pm 0.5\%$ FS
Response sensitivity	< 0.1% FS
Response time	10 ... 15 ms
Repeatability	$\pm 0.2\%$ FS
Accuracy	$\pm 0.4\%$ FS

Adjustment

Adjustment	Adjustment by calibration access cap on the top of the valve.
Zero point	The zero point can be changed by up to 10% of full scale, e.g. from 0 bar to 0.6 bar at a 6 bar regulator. External adjustment via potentiometer Z "zero".
Span	The maximum pressure value of the control range can be reduced by up to 10%, e.g. from 6 bar to 5.4 bar. External adjustment via potentiometer S "span".
Hysteresis	Response sensitivity can be adjusted via potentiometer H "hysteresis".



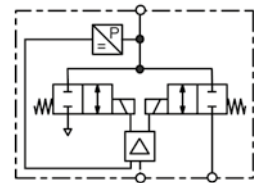
PROPORTIONAL PRESSURE REGULATOR WITH HIGH ACCURACY AND HIGH FLOW PQ3...PQ6

Description

Closed loop electronic pressure regulator consisting of two solenoid valves, an internal pressure transducer, and an electronic control circuit mounted to an integral volume booster. The pressure is controlled by activating the solenoid valves, which apply pressure to the pilot side of the volume booster.

Single loop

Pressure is controlled by two solenoid valves. One valve functions as inlet control, the other as exhaust. The pressure outlet is measured by an internal pressure transducer which provides a feedback signal to the electronic controls. This feedback signal is compared with the command input signal. Any difference between the two signals causes one of the two solenoid valves to open, allowing flow into or out of the system. Accurate pressure is maintained by these two valves.



0...0.1 bar/35 bar

Dimensions			Flow rate	Supply pressure	Accuracy	Connection thread	Pressure range	Order number	E*
A	B	C	l/min*1	max. bar	%	G/NPT	bar		
mm	mm	mm							

Single loop regulator

0 ... 10 V input and feedback signal
supply voltage 24 V DC, with coupling socket

PQ3/PQ4/PQ6

51	123	34	700	1	0,25	1/4" NPT	0...0,1	PQ3EE-C1
				1			0...0,5	PQ3EE-C5
				2			0...1,0	PQ3EE-01
				3			0...2,0	PQ3EE-02
				7			0...4,0	PQ3EE-04
				7			0...6,0	PQ3EE-06
				9			0...8,0	PQ3EE-08
				15			0... 10	PQ3EE-10
				15		3/8" NPT	0... 12	PQ3EE-12
				24			0... 16	PQ3EE-16
				24			0... 20	PQ3EE-20
				38			0... 25	PQ3EE-25
				38			0... 30	PQ3EE-30
				38			0... 35	PQ3EE-35
77	175	65	2000	1	0,4	1/2" NPT	0...0,1	PQ4EE-C1
				1			0...0,5	PQ4EE-C5
				2			0...1,0	PQ4EE-01
				3			0...2,0	PQ4EE-02
				7			0...4,0	PQ4EE-04
				7			0...6,0	PQ4EE-06
				9			0...8,0	PQ4EE-08
				15			0... 10	PQ4EE-10
77	175	65	2000	1	0,4	3/4" NPT	0...0,1	PQ6EE-C1
				1			0...0,5	PQ6EE-C5
				2			0...1,0	PQ6EE-01
				3			0...2,0	PQ6EE-02
				7			0...4,0	PQ6EE-04
				7			0...6,0	PQ6EE-06
				9			0...8,0	PQ6EE-08
				15			0... 10	PQ6EE-10



PQ3EE-10



PQ4EE-10

Special options, add the appropriate letter

4-20 mA input and monitor signal PQ . IC- . .

Accessories, enclosed

coupling socket	M16x0.75, 7-pin with 2 m cable	straight	PRK-A2L
		angular	PRK-C2L
mounting bracket	made of steel	for PQ3	PQKT-01
mounting bracket	made of steel	for PQ4/PQ6	PQKT-02



PRK-A

PRK-C

*1 at 8 bar inlet pressure and 6 bar outlet pressure

Technical details: see previous page

PDF CAD
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* Product group



Order example:
PQ3EE-C1

Proport.
pressure
10

Description

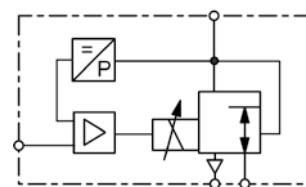
The pneumatic proportional pressure regulator controls the outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system in a compact monoblock assembly with proportional solenoid valve, electronic regulator and internal pressure transducer.

In the process, the outlet pressure is transformed into a proportional electrical signal and compared with the input signal. If the outlet pressure exceeds the preset setpoint, the valve exhausts down to the pressure desired.

The valve has no constant bleed. At absence of input signal or supply voltage the valve exhausts. The power supply of the setpoint potentiometer is provided by the proportional regulator via connector pin number 5.

Pressure transducer Open transducers: 100 mbar, 500 mbar, 1/5/10/16/20/30/50 bar and vacuum

Application examples Proportional pressure regulators are being used for blowing machines, ultrasonic equipments, testing machines, painting systems, contouring systems, laser welding machines, textile machines, cheese presses, pneumatic brakes, clamping devices and medical engineering.



G $\frac{1}{8}$ up to G1

General technical features

Description	3-port/2-way pressure regulator with proportional magnet, integrated hybrid PCB and closed loop with pressure transducer in compact monoblock assembly.		
Mounting position	any, preferably upright		
Protection class	IP 54 with standard connector, IP 65 with special connector		
Shock resistance	3G		
Temperature range	0 °C up to 50 °C / 32 °F to 122 °F, high temperature version on request		
Material	Body:	brass (G $\frac{1}{8}$) and aluminium (G $\frac{1}{4}$, G $\frac{1}{2}$ u. G1)	Inner valve: brass and SST
	Seals:	NBR/Buna-N, on request EPDM or FKM	FKM for 50 bar version

Pneumatic features

Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart, min. 10% above outlet pressure
Flow rate	see chart, at 6 bar inlet pressure and 5 bar outlet pressure
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption

Electrical features

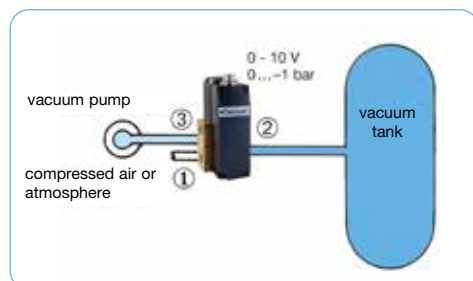
Supply voltage	24 V DC + 15% - 10%, residual ripple max. 10%
Power consumption	12 W at G $\frac{1}{8}$, 22 W at G $\frac{1}{4}$, 30 W at G $\frac{1}{2}$, 44 W at G1
Current consumption	0.5A at G $\frac{1}{8}$, 1.0A at G $\frac{1}{4}$, 1.25A at G $\frac{1}{2}$, 1.7A at G1
Command signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, digital or Profibus DB rising curve as standard, optionally declining curve
Impedance	100 kΩ at voltage signal (0.1 mA current consumption) 500 Ω at current signal
Electrical connector	circular plug according to DIN 43651, 7-pin plug for analogue signal 16-pin plug for digital signal

Accuracy

Linearity/Hysteresis	< 1% FS
Response sensitivity	< 0.1% FS
Repeatability	< 0.1% FS
Over all accuracy	± 0.5%
Regulating time	< 1 s over the range, 70 ms at 10 to 90% or 90 to 10% of the range

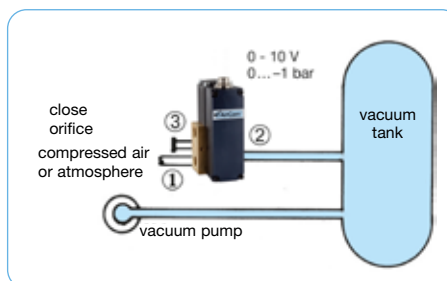
Adjustment

Zero point	calibration ± 10% FS via potentiometer P2
Range	calibration + 5% FS or -10% FS via potentiometer P1
Amplification	calibration 1:1 up to 1:10 via potentiometer P7



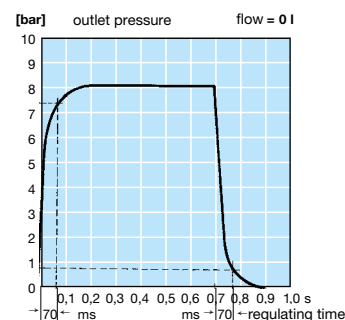
Downstream regulation (V1)

The vacuum pump saves energy and it is easy to fill the tank either with vacuum or pressure. A filter is recommended at orifice ①.

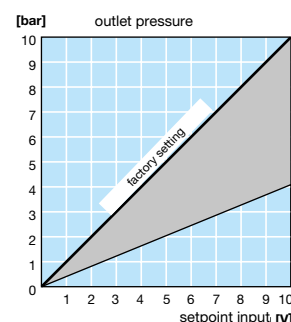


Upstream regulation (V2)

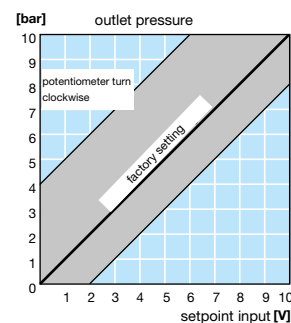
Upstream installation is preferred if rapid evacuation of a tank or system is required. A filter is recommended at orifice ①.



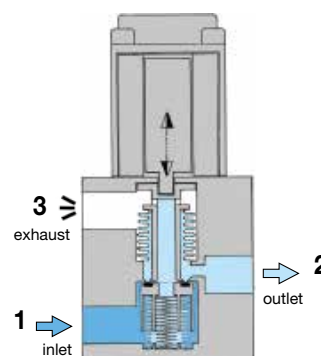
regulating time, step function



slope, range adjustment



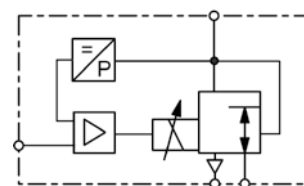
zero point, adjustment



cross-section

Technical features

• Pressure range	0 ... -1.0 bar to 0 ... 50 bar	• Linearity / Hysteresis	< 1% FS
• Command signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, digital	• Response sensitivity	± 0,5% FS
• Feedback signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA	• Repeatability	± 0,5% FS
• Adjustment	zero point, range and amplification	• Regulating time	< 1 s
• Pressure sensors	100 / 500 mbar, 1/5/10/16/20/30/50 bar	• Power consumption	12 / 22 / 30 / 44 W
• Flow rate	250 / 820 / 1700 / 6500 l/min	• Exhaust	full nominal size



G $\frac{1}{8}$ up to G1
0 ... 100 mbar/50 bar

Dimensions			Nominal	K _v -	Flow	Supply	Connection	Pressure	Order	E*
A	B	C	size	value	rate	max.	thread	range	number	
mm	mm	mm	DN	(m³/h)	l/min*1	bar	G	bar		

Proportional pressure regulator

0-10 V input signal, supply voltage 24 V DC, with coupling socket

PR

35	80	63	3	0.18	210	-1	G $\frac{1}{8}$	0 ... -1.0	PRA00-00V1
						-1		0 ... -0.5	PRA00-00V1A5
						-1		0 ... -0.1	PRA00-00V1A1
						3		-1,0 ... 1.0	PRA00-01V1
						1		0 ... 0.1	PRA00-A100
						2		0 ... 0.5	PRA00-A500
						2		0 ... 1.0	PRA00-0100
						12		0 ... 6.0	PRA00-0600
						12		0 ... 10	PRA00-1000
						22		0 ... 20	PRA00-2000
52	105	74	6	0.6	700	-1	G $\frac{1}{4}$	0 ... -1.0	PR000-00V1
						-1		0 ... -0.5	PR000-00V1A5
						-1		0 ... -0.1	PR000-00V1A1
						3		-1,0 ... 1.0	PR000-01V1
						1		0 ... 0.1	PR000-A100
						2		0 ... 0.5	PR000-A500
						2		0 ... 1.0	PR000-0100
						12		0 ... 6.0	PR000-0600
						12		0 ... 10	PR000-1000
						18		0 ... 16	PR000-1600
						22		0 ... 20	PR000-2000
						40		0 ... 30	PR000-3000
						60		0 ... 50	PR000-5000
70	150	101	12	1.2	1400	-1	G $\frac{1}{2}$	0 ... -1.0	PR100-00V1
						2		0 ... 1.0	PR100-0100
						12		0 ... 6.0	PR100-0600
						12		0 ... 10	PR100-1000
						14		0 ... 12	PR100-1200
96	190	115	20	4.8	5600	-1	G1	0 ... -1.0	PR200-00V1
						2		0 ... 1.0	PR200-0100
						12		0 ... 6.0	PR200-0600
						12		0 ... 10	PR200-1000
						14		0 ... 12	PR200-1200

*1 at 6 bar supply pressure and 5 bar outlet pressure

Technical details: see previous page

PDF CAD
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* Product group



Order example:
PRA00-00V1



PRA



PR0



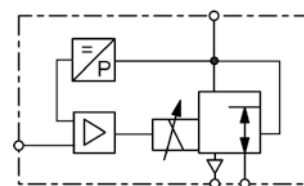
PR1



PR2

Technical features

• Pressure range	0 ... 1.0 bar to 0 ... 50 bar	• Linearity / Hysteresis	< 1% FS
• Command signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA, digital	• Response sensitivity	± 0,5% FS
• Feedback signal	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA	• Repeatability	± 0,5% FS
• Adjustment	zero point, range and amplification	• Regulating time	< 1 s
• Pressure sensors	100 / 500 mbar, 1/5/10/16/20/30/50 bar	• Power consumption	12 / 22 / 30 / 44 W
• Flow rate	250 / 820 / 1700 / 6500 l/min	• Exhaust	full nominal size



G¹/₈ up to G1
0 ... 100 mbar/50 bar

Special options, add the appropriate letter or number

input signal	0-20 mA		PR .. 1-....
	4-20 mA		PR .. 2-....
	8 bit digital with hold function		PR .. 3-....
	Profibus DP	from G ¹ / ₄ on	PR .. 8-....
feedback signal	0-10 V		PR . 1-....
	0-20 mA		PR . 2-....
	4-20 mA		PR . 3-....
external feedback signal	0-10 V		PR . 4-....
	0-20 mA		PR . 5-....
	4-20 mA		PR . 6-....
deviant pressure range	indicate on order		PR ... -XX. .
for vacuum	Bypass version	G ¹ / ₈ and G ¹ / ₄	PR ... - . V2
		G ¹ / ₂	PR1. . . . V2
		G1	PR2. . . . V2
for absolute pressure			PR ... - . 0A
protection class IP65	special cable box, PRK-IP65		PR ... - . 06
body made of stainless steel	valve body and inner parts , 1.4304, EPDM seals, G ¹ / ₄ and G ¹ / ₂		PR ... - . SS
body made of aluminium	nly valve body, max. 20 bar	G ¹ / ₄ only	PR ... - . 19
for oxygen	specially cleaned, FKM elastomer		PR ... - . 15



example: combination PR with booster

Accessories, enclosed

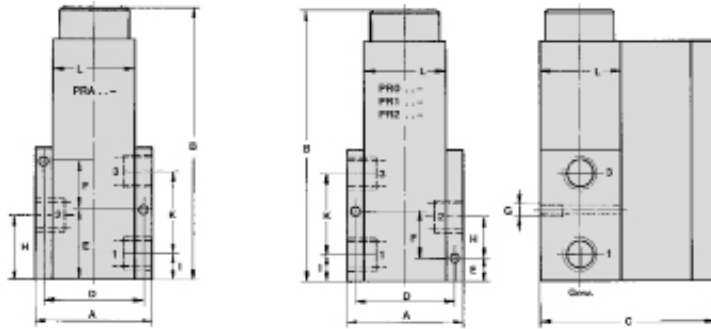
coupling socket	7-pin with 2 m cable	straight	PRK-A2L
	7-pin with 5 m cable	straight	PRK-A5L
	7-pin with 2 m cable, IP65	straight	PRK- I 2L
	7-pin with 2 m cable	angular	PRK-C2L
	7-pin with 5 m cable	angular	PRK-C5L
other cable length	e.g. 10 m available		



PRK-A

PRK-C

DIMENSIONS AND CONNECTION DIAGRAM "AIRTRONIC"®



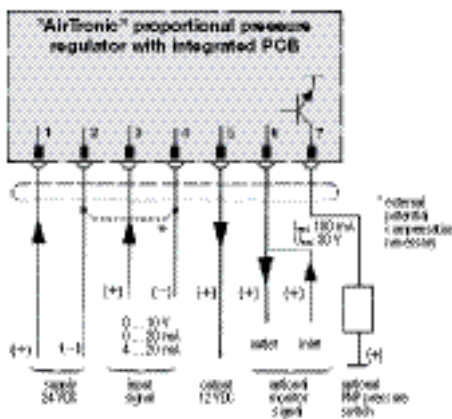
1: inlet
2: outlet
3: exhaust

Proport. regulator	thread	A	B	C	D	E
PRA ...	G 1/8	35	80	63	29	18
PR0 ...	G 1/4	52	105	74	43	10
PR1 ...	G 1/2	70	150	101	57.5	12
PR2 ...	G 1	96	190	115	79	15

Proport. regulator	F	G	H	I	K	L
PRA ...	7	M 4	15	10	16.6	25
PR0 ...	20	M 4	16	11*	34	36
PR1 ...	28	M 6	23	15	48.5	45
PR2 ...	33	M 8	30	20	60	60

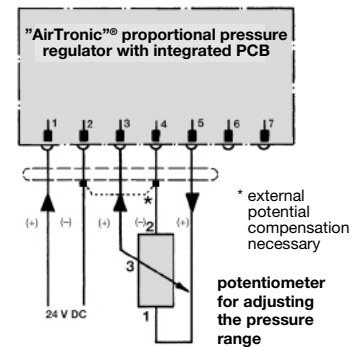
* 14 mm from 30 bar pressure range on

"AIRTRONIC"® PROPORTIONAL PRESSURE REGULATOR WITH INTEGRATED PCB



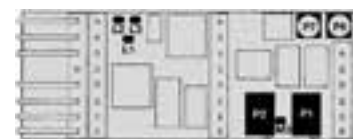
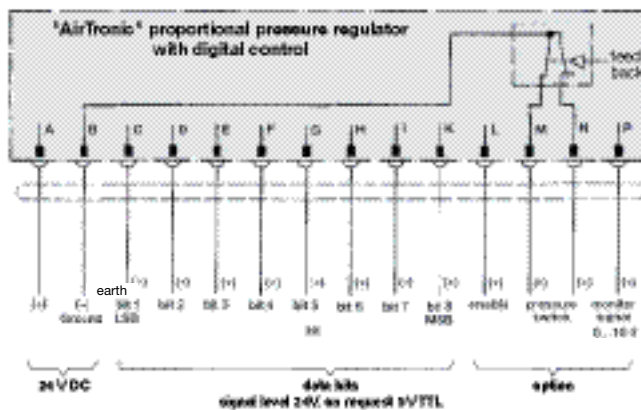
pin	4-wire	7-wire
1	white	grey
2	brown	blue
3	yellow	yellow
4	green	green
5	-	brown
6	-	white
7	-	pink

pin numbers seen from solder pin side



"AIRTRONIC"® CONNECTION DIAGRAM

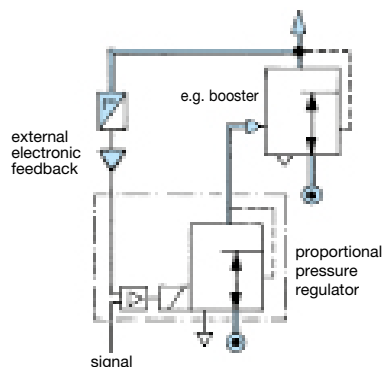
CONNECTION DIAGRAM WITH POTENTIOMETER



P1 range:	-10%...+5%
P2 zero point:	± 10%
P6 option pressure switch:	5...15%
P7 proportional amplification:	1...11
M3 measuring point offset zero	
L1 earth (GND)	
L2 solenoid	+24 V
L3 solenoid (pulse width modulation)	PWM

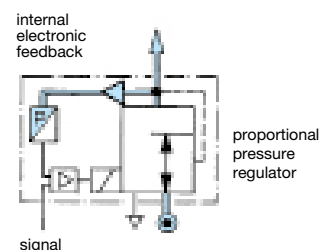
CONNECTION DIAGRAM FOR DIGITALLY CONTROLLED PROPORTIONAL PRESSURE REGULATOR

ADJUSTMENT OF THE PROPORTIONAL REGULATOR



EXTERNAL ELECTRONIC FEEDBACK

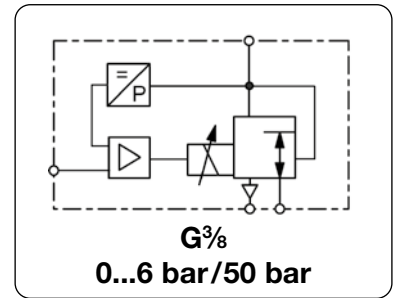
0 ... 10 V or 0/4 ... 20 mA



INTERNAL ELECTRONIC FEEDBACK

as standard

Description	The pneumatic proportional regulator controls the outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system in a compact mono block assembly with proportional solenoid valve, electronic regulator and internal pressure transducer. The valve works as a slide valve and is designed for flow applications such as thermal cutting. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software. Data record can be saved and used for further valves. The valve has a constant bleed. At absence of input signal or supply voltage the valve exhausts.				
Software	Display: signal, outlet pressure, PID parameters, pressure switch signal etc.				
Scope function	view setpoint, outlet pressure, internal signals from PID control				
Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases				
Supply voltage	24 V DC ± 10 V, residual ripple < 10%	Power consumption	14 W (810mA current consumption)		
Signal range	0-10 V, 100 kΩ impedance		0/4-20 mA, 250 Ω impedance		
Electr. connection	plug M12x1, 5-pin (protection class IP65)	Mounting position	any, preferably solenoid on top		
Accuracy	hysteresis: 0.5% FS	Linearity/repeatability	< ± 0.5% FS		
Temp. range	fluid / ambient: 0 °C to 60 °C / 32 °F to 140 °F	Material	Body: aluminium Elastomer: NBR/Buna-N		



Dimensions			Nominal size	K _v -value	Flow rate	Supply max.	Connection thread	Pressure range	Order number	
A	B	C	DN	(m³/h)	l/min*1	bar	G	bar		E*
mm	mm	mm								

Proportional pressure regulator										0-10 V command signal, supply voltage 24 V DC, without M12 coupling socket	PF
60	160	78	8	1,45	1700	12	G3/8	0 ... 6	PF000-0600		
						18		0 ... 10	PF000-1000		
						18		0 ... 16	PF000-1600		
						22		0 ... 20	PF000-2000		
						40		0 ... 30	PF000-3000		
						50		0 ... 40	PF000-4000		
						60		0 ... 50	PF000-5000		



PF

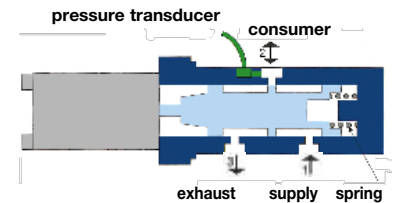


Special options, add the appropriate letter or number

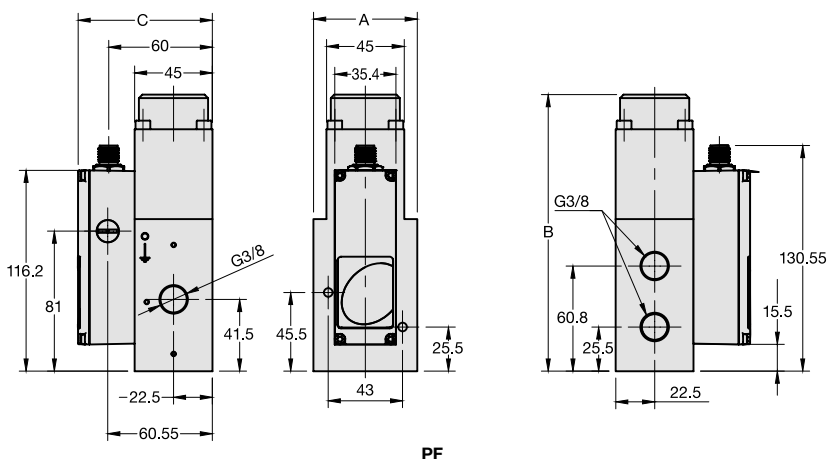
command signal	0-20 mA	PF .. 1-....
	4-20 mA	PF .. 2-....
monitor signal	0-10 V	PF . 1.-....
	4-20 mA	PF . 3.-....
deviant pressure range	indicate on order	PF ...-XX..
for oxygen	specially cleaned, FKM elastomers	PF ...-...15

Accessories, enclosed

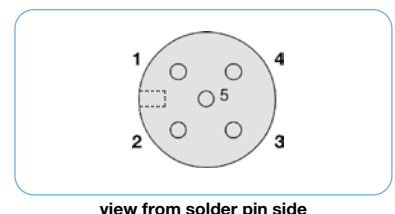
PR adapter	with USB plug and 1 m cable	PDUSB
software	basic version "light"	PDSOFT1*2
coupling socket	M12x1, 5-pin, with 2 m cable, 5 x 0.25	angular KM12-C5-2
	M12x1, 5-pin, with 5 m cable, 6 x 0.25	angular KM12-C5-5



The position of the slide is continuously shifting according to command signal and pressure change at the outlet. Thereby a constant outlet pressure is achieved.



*1 at 6 bar supply pressure and 5 bar outlet pressure
*2 You do not need any software to use the valve!



pin	description	5-wire cable (2m)
1	24 V supply voltage	brown
2	analog input signal	white
3	supply ground	blue
4	analog ground	
5	digital pressure switch signal	black
housing	EMC shield	grey

connection diagram

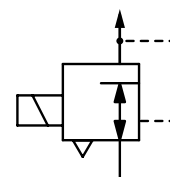
* Product group

PDF CAD
www.aircom.net



Order example:
PF000-0600

Description	Proportional pressure regulator without integrated control electronics and without internal pressure sensor. The setpoint is given to the solenoid as a 24V PWM signal. The output pressure of the proportional pressure controller can be measured with an external sensor. This turns an „open“ control loop into a closed control loop.		
Media	dry, lubricated or non-lubricated and 50 µm filtered compressed air or neutral gases		
Signal voltage	24 V DC +/-10%		
PWM frequency	G¼: 330 to 1000 Hz G½ and G1: 330 to 700 Hz		
Rated current	DN6: 1000 mA (24 W); DN12: 1400 mA (34 W); DN20: 1800 mA (44 W)		
Electrical connector	Coupling socket according to DIN 43650		
Accuracy	depending on the quality of the external sensor and the design of the control loop, < 1% possible		
Regulating time	1s over the control range, 70 ms over 90% of the range at 0 liter volume		
Mounting position	vertical		
Temperature range	Ambience: -10 °C bis +60 °C / 14 °F to 140 °F		
Material	Body: Aluminium	Inner valve: stainless steel and brass	Elastomer: NBR/Buna-N



G¼ to G1

Dimensions			Nominal	K _v -	Flow	P1	Connection	Pressure	Order	
A	B	C	size	value	rate	max.	thread	range	number	E*
mm	mm	mm	DN	(m³/h)	l/min*1	bar	G	bar		

Proportional pressure regulator						without electronics	PG			
52	115	35	6	0.6	700	8	G¼	0 ... 6	PG2-0600	
						16		0 ... 16	PG2-1600	
70	151	45	12	1.2	1400	12	G½	0 ... 12	PG4-1200	
96	188	60	20	4.8	5600	12	G1	0 ... 10	PG8-1000	



PG2

Special options, add the appropriate letter

FKM elastomers

PG . - . . . V



PG4

Accessories, enclosed

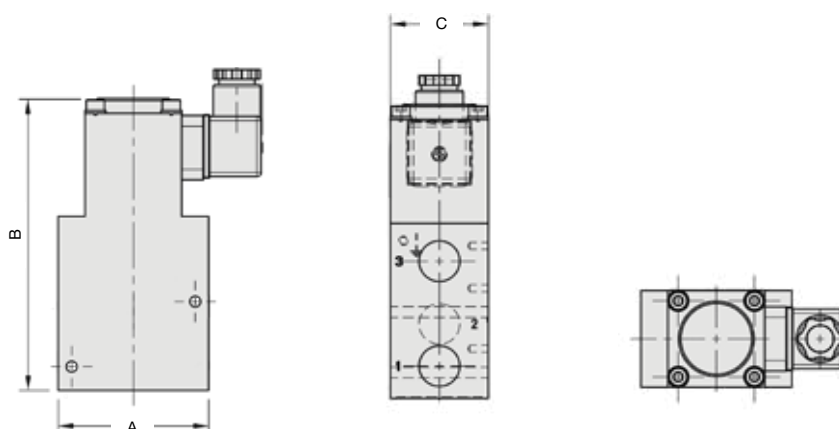
Plug amplifier

Electrical connection M12, 5-pin
Configuration via PC interface and programming adapter
or alternatively via switches integrated in the line socket.
Supply voltage: 24 V DC Rated current: max. 1.1 A
command signal: 0-10V
command signal: 4-20mA

for PG2 PVY-02U
for PG2 PVY-02I



Plug amplifier
PVY-02.



PG4

- 1: Input
- 2: Output
- 3: Exhaust



Description

Piezo-operated proportional pressure regulator based on the principle of a piezo element which bends when voltage is applied. At the end of the piezo element is a flapper valve, which operates against a precision nozzle to create back pressure on the control diaphragm of a booster relay. A pressure transducer provides feedback of the outlet pressure compared with the setpoint value with correction by the electronic control system if necessary.

Minimal power consumption

- no self-heating, even none at pressure absence
- safe battery operation over a long period
- almost no power consumption necessary for regulation
- extremely quick regulating operations
- low-noise regulation especially for medical and laboratory technology
- particularly suitable for portable devices in conjunction with battery operation
- ideal for limited space conditions

Piezo element

Small and light design

PRE1

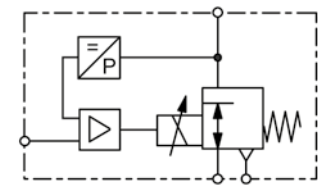
DN 2.5, 350 l/min, coupling socket M8x1, 3-pin,
monitor signal optionally 0... P_{2max} \triangleq 0...10 V,
DN 6, 1600 l/min, coupling socket M12x1.5, 5-pin
monitor signal standard 0... P_{2max} \triangleq 0...10 V,

monitor signal, 4-pin
max. 1 mA, $R_a > 1k\Omega$

PRE2

DN 2.5, 350 l/min, coupling socket M8x1, 3-pin,
monitor signal optionally 0... P_{2max} \triangleq 0...10 V,
DN 6, 1600 l/min, coupling socket M12x1.5, 5-pin
monitor signal standard 0... P_{2max} \triangleq 0...10 V,

max. 1 mA, $R_a > 1k\Omega$



0-200 mbar/16 bar
10 ms, 800 mW, 2100 l/min

General features

Description	Piezo-operated 3-port/2-way proportional pressure regulator with internal pressure sensor and closed loop.
Protection class	IP 30 for PRE1 according to DIN EN 60529 IP 65 for PRE2 according to DIN EN 60529 with coupling socket and tapped exhaust
Mounting position	any
Temperature range	0 °C to 50 °C / 32 °F to 122 °F
Material	Body: plastic, PRE1 IXEF1022 PRE2 Grivity Gvx-65H Elastomer: NBR/Buna-N Inner valve: brass and spring steel

Pneumatic features

Media	dry, unlubricated and 5 μ m filtered compressed air or non-corrosive gases
Supply pressure	min. 1.5 bar (at $P_2 \leq 8$ bar) or 2 bar (at $P_2 \geq 8$ bar) and additional P_1 min. 1 bar greater than P_2 max. 2.5 bar up to 17 bar, depending on pressure range according to chart
Flow rate	PRE1: max. 350 l/min at $P_1 = 10$ bar, $P_2 = 6$ bar and open outlet DN 2.5 PRE2: max. 1600 l/min at $P_1 = 10$ bar, $P_2 = 6$ bar and open outlet DN 6
Exhaust	PRE1: 180 l/min at $P_2 = 6$ bar, 20 l/min at $P_2 = 200$ mbar PRE2: 1000 l/min at $P_2 = 6$ bar, 400 l/min at $P_2 = 2$ bar
Air consumption	PRE1: < 1.0 l/min independent of pressure range PRE2: < 1.0 l/min independent of pressure range

Electrical features

Supply voltage	PRE1: 24 V DC $\pm 10\%$, 0.4 W, current consumption max. 15 mA PRE2: 24 V DC $\pm 10\%$, 0.8 W, current consumption max. 30 mA
Command signal	4...20 mA or 0...10 V
Impedance	PRE1: $\geq 66 k\Omega$ at voltage signal, $\leq 500 \Omega$ at current signal PRE2: $\geq 55 k\Omega$ at voltage signal, $\leq 500 \Omega$ at current signal
Electrical connector	PRE1: coupling socket M8x1, 3-pin PRE1-R: coupling socket M8x1, 4-pin PRE2: coupling socket M12x1.5, 5-pin
Monitor signal	PRE1-U.R: as option 0... P_{2max} / 0...10 V, max. 1 mA, $R_a > 1k\Omega$ PRE2: standard 0... P_{2max} / 0...10 V, max. 1 mA
Electronic switch	PRE2 only, PNP, "on" when setpoint and actual value match in the tolerance range 0 V DC = off, $U_N - 0.7$ V DC = on, output current < 200 mA, tolerance $P_2: \pm 2\%$
Failsafe	If signal or electrical supply fails, outlet pressure falls to zero and the regulator exhausts.

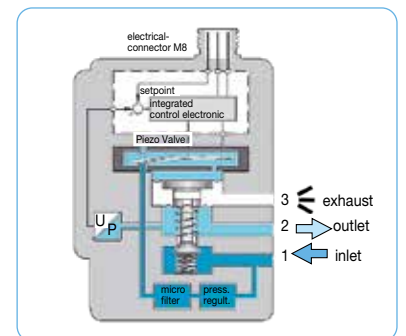
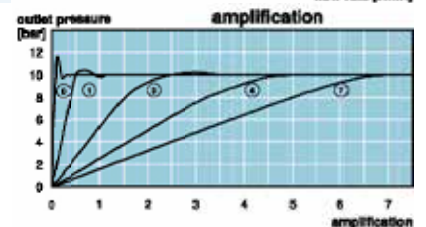
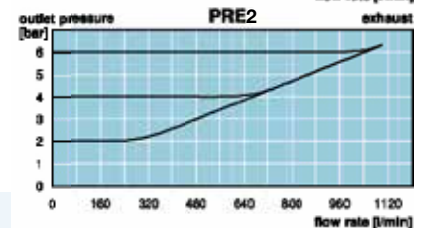
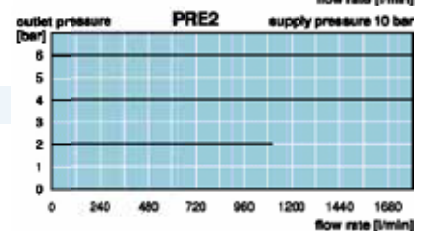
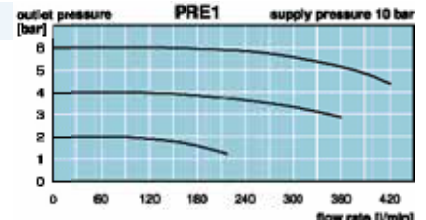
Note For long connection lines shielding is to be used. Pay attention to voltage drops.
As the case may be, current signal is preferable.

Accuracy

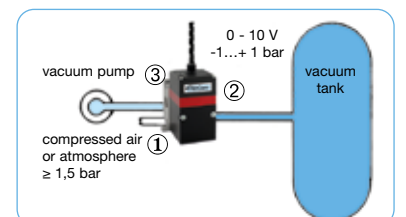
Linearity	< 0.5% FS, at 0.2 bar range	< 1 % FS
Hysteresis	< 0.2% FS, at 0.2 bar range	< 0.5% FS
Response sensitivity	< 0.1% FS, at 0.2 bar range	< 0.5% FS at PRE1 < 0.2% FS at PRE2
Repeatability	< 0.2% FS, at 0.2 bar range	< 0.5% FS
Response time	10 ms	
Over all accuracy	$\pm 0.2\%$ FS (Monitor signal $\pm 1.5\%$ FS)	

Adjustment

Zero point	calibration only by factory
Range	calibration only by factory

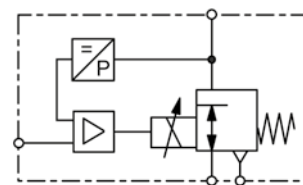


cross-section PRE1



PRE2-V1 for vacuum

• Highly dynamic	10 ms, critical frequency 43 Hz	• Linearity	< 0.5% or 1% FS
• Low power consumption	400 mW / 800 mW nominal power	• Hysteresis	< 0.2% or 0.5% FS
• No self-heating	due to low power consumption	• Response sensitivity	< 0.1% or 0.5% FS
• Battery operation	due to low power consumption	• Repeatability	< 0.2% or 0.5% FS
• For portable devices	up to 3 bar pressure range	• Failsafe	exhaust at power breakdown
• No over-oscillation	adjustable closed loop amplification	• Protection class	IP 30 or IP 65
• No resonance oscillation	adjustable closed loop amplification	• Two-wire system	for signal 4 ... 20 mA



0...200 mbar/16 bar
10 ms, 800 mW, 2400 l/min

Dimensions			Supply pressure	Flow rate	Connection thread	Pressure range	Order number for inlet signal	
A	B	C						
mm	mm	mm	max. bar	l/min*1	G	bar	4-20 mA	0-10 V

Proportional press. regl.					supply voltage 24 V DC, constant bleed, with straight coupling socket and 5 m cable		PRE	PRE
36	61	53	2.5	100	G⅜	0... 0.2	PRE1-IA2	PRE1-UA2
			6.0	200		0... 2	PRE1-I02	PRE1-U02
			10	250		0... 5	PRE1-I05	PRE1-U05
			280	0... 6		PRE1-I06	PRE1-U06	
			350	0... 8		PRE1-I08	PRE1-U08	
46	84	68	2.5	800	G¼	-1 ... 1	PRE2-I01V1	PRE2-U01V1
			10	1500		-1 ... 4	PRE2-I04V1	PRE2-U04V1
			1500	-1 ... 6		PRE2-I06V1	PRE2-U06V1	
			12	1700		-1 ... 10	PRE2-I10V1	PRE2-U10V1
			2.5	500		0... 0.5	PRE2-IA5	PRE2-UA5
			900	0... 1		PRE2-I01	PRE2-U01	
			7.0	1100		0... 2	PRE2-I02	PRE2-U02
			1100	0... 3		PRE2-I03	PRE2-U03	
			10	1500		0... 4	PRE2-I04	PRE2-U04
			1500	0... 5		PRE2-I05	PRE2-U05	
			1500	0... 6		PRE2-I06	PRE2-U06	
			12	1700		0... 10	PRE2-I10	PRE2-U10
			17	2400		0... 16	PRE2-I16	PRE2-U16



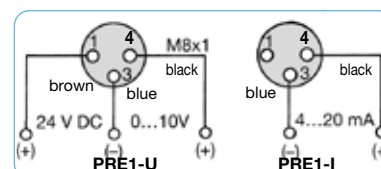
PRE1



PRE2

monitor signal	0-10 V, standard at PRE2
flange connection	without manifold
w/o coupling socket	and without cable
mounting clips	for DIN rail
deviant pressure ranges	
for oxygen^{sz}	specially cleaned

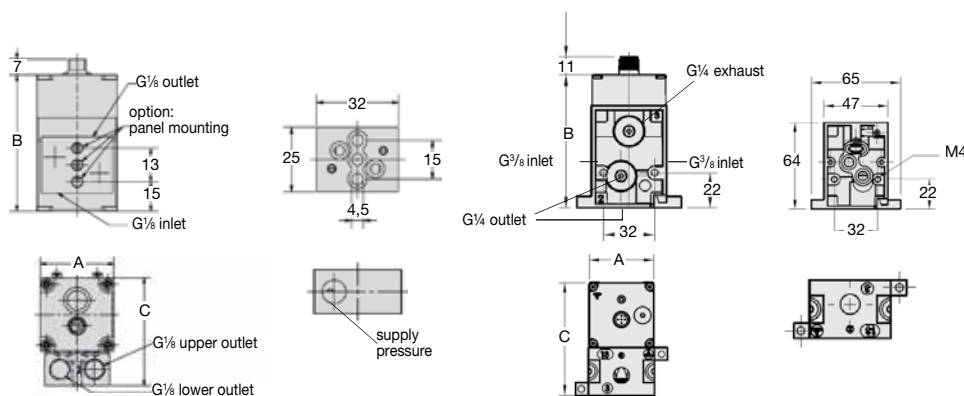
for PRE1-U PRE1-...R
PRE-...F
PRE-...H
PRE-...C
PRE-...XX
PRE-...15



connection diagram

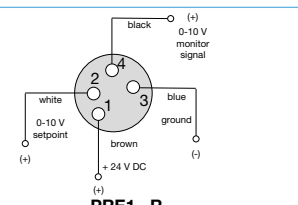
coupling socket with 5 m cable, angular

M8x1, 3-pin	for PRE1	KM08-C3-5
M8x1, 4-pin	for PRE1-R	KM08-C4-5
M12x1.5, 5-pin	for PRE2	KM12-C5-5

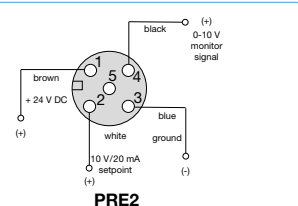


*1 at open outlet

*2 by PRE1 no tapped exhaust on the manifold



connection diagram



connection diagram

* Product group


Technical details: see previous page

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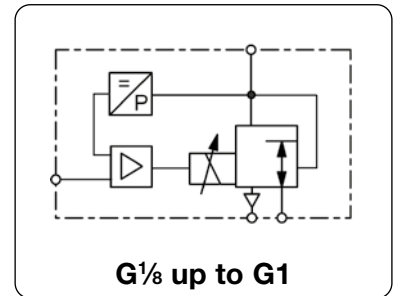
Order example:
PRE1-IA1

Proport.
pressure



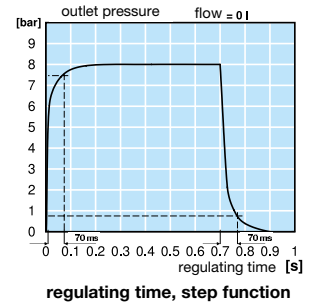
10

Description	The pneumatic proportional regulator controls the outlet pressure in proportion to an electrical command input signal. It comprises a complete closed loop servo system in a compact mono block assembly with proportional solenoid valve, electronic regulation and internal pressure transducer. The valve works as a 3-port/2-way valve with proportional magnet. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software. Data record can be saved and used for further valves. The valve has no constant bleed. At absence of input signal or supply voltage the valve exhausts.		
Software	Display:	signal, outlet pressure, parameter, pressure switch signal etc.	
	Scope function:	view setpoint, outlet pressure, internal signals from PID control	
	Parameters:	command signal, zero point, overload threshold, ramp	
	Valve diagnosis:	parameters factory set or customised, optimization of the valve	



General technical features

Description	3-port/2-way valve with proportional magnet and digital control
Mounting position	any, preferably vertical
Protection class	IP65 with mounted coupling socket
Shock resistance	3G
Temperature range	0 °C to 60 °C / 32 °F to 140 °F, fluid / ambient temperature
Material	Body: brass (for G ¹ / ₈ and G ¹ / ₄) or aluminium (for G ¹ / ₂ and G1) Inner valve: brass and stainless steel Seals: NBR/Buna-N, EPDM or FKM on request, FKM for 50 bar version

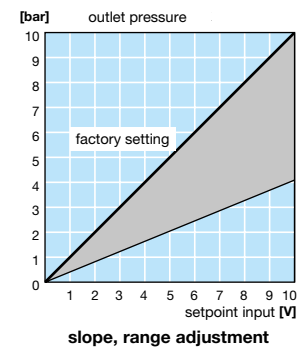


Pneumatic features

Media	dry, lubricated, unlubricated and 5 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart
Flow rate	see chart, at 6 bar supply pressure and 5 bar outlet pressure
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption

Electrical features

Supply voltage	24 V DC ±10%
Electrical connection	M12, 5-pin coupling socket
Power consumption	12 W at G ¹ / ₈ , 24 W at G ¹ / ₄ , 34 W at G ¹ / ₂ , 44 W at G1
Current consumption	500 mA at G ¹ / ₈ , 1000 mA at G ¹ / ₄ , 1400 mA at G ¹ / ₂ , 1800 mA at G1
Command signal	0-10 V, 0-20 mA, 4-20 mA
Impedance	100 kΩ at voltage signal (0.1 mA current consumption) 250 Ω at current signal
Setpoint input	0-10 V, 0-20 mA, 4-20 mA



Accuracy

Linearity	< ± 0.5% FS
Hysteresis	< ± 1.0% FS
Repeatability	± 0.5% FS
Response sensitivity	± 1.0% FS

Adjustment and parameter settings

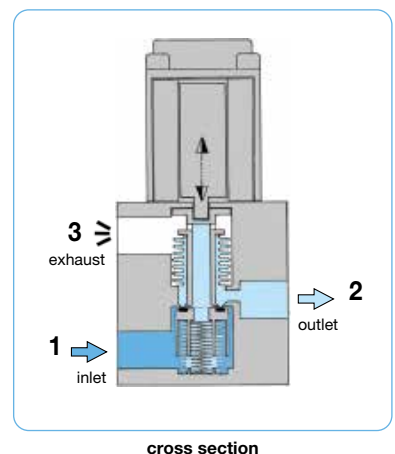
Zero point / range	Zero point and range can be calibrated percentagewise.
Control mode / Amplification	Through the software different control modes may be chosen. All parameters of P/Pi/PID controllers can be tuned.
Diagnosis	A diagnostic tool including data recording is available within the software.
Characteristic curve	Increasing or decreasing curve can be set (increasing by standard).

Downstream regulation for vacuum/positive pressure regulators (V1)

Recommended when tank shall be evacuated or filled with positive pressure. At inlet port (1) either compressed air or atmosphere has to be applied. The use of a filter is advisable.

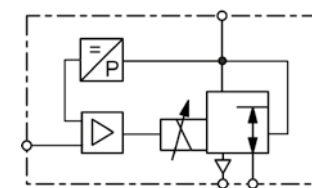
Downstream regulation for vacuum regulators (V3)

Recommended when tank shall be evacuated. Exhaust port (3) will be closed. Inlet port (1) must be connected with vacuum pump. Outlet port (2) has to be connected with consumer or tank.



Technical features

• Pressure range	0...0.1 bar bis 0...50 bar	• Linearity	< ± 0.5% FS
• Command signal	0-10 V, 0-20 mA, 4-20 mA	• Hysteresis	< ± 1.0% FS
• Output signal	0-10 V, 0-20 mA, 4-20 mA	• Response sensitivity	± 1.0% FS
• Regulating time	< 1 s	• Repeatability	± 0.5% FS
• Pressure sensor	100 / 500 mbar, 1 / 5 / 10 / 16 / 20 / 30 / 50 bar	• Rated input	12 / 22 / 30 / 44 W
• Flow rate	250 / 820 / 1700 / 6500 l/min	• Relief capacity	full nominal size



G $\frac{1}{8}$ up to G1
0 ... 100 mbar/50 bar

Dimensions			Nominal size	K _v -value	Flow rate	Supply max.	Connection thread	Pressure range	Order number	
A	B	C	DN	(m ³ /h)	l/min*1	bar	G	bar		E*
mm	mm	mm								

Proportional pressure regulator 0-10 V command signal, supply voltage 24 V DC, with coupling socket

PP

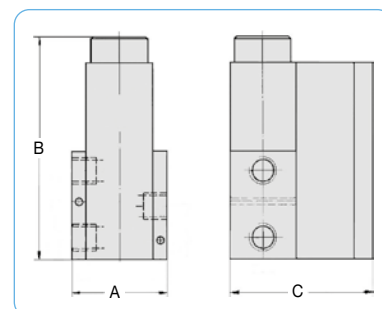
35	83	57	3	0.18	210	-1	G $\frac{1}{8}$	0...-1.0	PPA00-00V3
						2		0... 0.1	PPA00-A100
						2		0... 0.5	PPA00-A500
						2		0... 1.0	PPA00-0100
						8		0... 3.0	PPA00-0300
						12		0... 6.0	PPA00-0600
						12		0... 10	PPA00-1000
						18		0... 16	PPA00-1600
						22		0... 20	PPA00-2000
						30		0... 25	PPA00-2500
52	105	68	6	0.6	700	-1	G $\frac{1}{4}$	0...-1.0	PP000-00V3
						2		0... 0.1	PP000-A100
						2		0... 0.5	PP000-A500
						2		0... 1.0	PP000-0100
						8		0... 3.0	PP000-0300
						12		0... 6.0	PP000-0600
						12		0... 10	PP000-1000
						18		0... 16	PP000-1600
						22		0... 20	PP000-2000
						40		0... 30	PP000-3000
						60		0... 50	PP000-5000
70	136	85	12	1.2	1400	-1	G $\frac{1}{2}$	0...-1.0	PP100-00V3
						2		0... 1.0	PP100-0100
						8		0... 3.0	PP100-0300
						12		0... 6.0	PP100-0600
						12		0... 10	PP100-1000
						14		0... 12	PP100-1200
96	190	101	20	4.8	5600	-1	G1	0...-1.0	PP200-00V3
						2		0... 1.0	PP200-0100
						8		0... 3.0	PP200-0300
						12		0... 6.0	PP200-0600
						12		0... 10	PP200-1000
						14		0... 12	PP200-1200



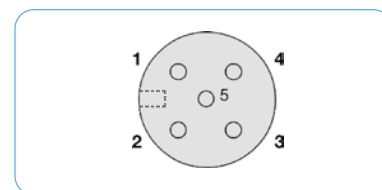
PPA



PP0



dimensions



view from solder pin side

Special options, add the appropriate letter or number

setpoint input	0-20 mA	1		4-20 mA	PP . . 2-....
feedback output	0-10 V	1	0-20 mA	2	PP . 3. -....
deviant pressure range	indicate on order				PP . . . -XX .
for absolute pressure					PP0A
body made of stainless steel	P ₂ = max. 20 bar, body / inner parts, 1.4304, EPDM, G $\frac{1}{4}$ and G $\frac{1}{2}$				PPSS
body made of aluminium	valve body only, max. 20 bar			G $\frac{1}{4}$ only	PP019
for oxygen	specially cleaned, FKM elastomer				PP15
cascade regulation	w/o monitor signal 2. sensor, electr. feedback 0-10 V				PPKU
	w/o monitor signal 2. sensor, electr. feedback 4-20 mA				PPKI

Accessories, enclosed

PR adapter	with USB plug and 1 m cable	PDUSB
software	basic version "light"	PDSOFT1*2
coupling socket	M12x1, 5-pin with 2 m cable, 5 x 0.25 angular	KM12-C5-2
	5 m cable, 5 x 0.25 angular	KM12-C5-5
adapter cable	M12x1, 5-pin with 0.2 m cable	PRK-PR-PP

*1 at 6 bar supply pressure and 5 bar outlet pressure

*2 You do not need any software to use the valve!

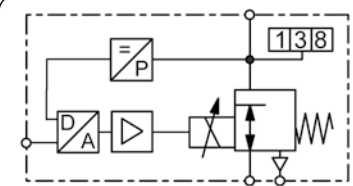
Technical details: see previous page

PDF CAD
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* Product group

Order example:
PPA00-00V3

Description	The proportional pressure regulator is digitally controlled and works as a 3/2 valve with proportional magnet and closed loop. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software.
Software	Display: signal, outlet pressure, PID parameters, pressure switch signal etc. Scope function: view setpoint, outlet pressure, internal signals from PID control
Parameters	command signal, zero point, overload threshold, ramp Valve diagnosis: parameters factory-set or customised, optimization of the valve.



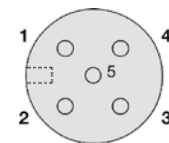
G¹/₈ to G³/₈ or flange programmable

General technical features

Description	3-port/2-way valve with proportional magnet and digital control
Mounting position	any, preferably upright
Protection class	IP65 with mounted coupling socket
Temperature range	0 °C to 50 °C / 32 °F to 122 °F ambient
Material	Body: aluminium Inner valve: POM (Polyacetal) Elastomer: NBR/Buna N and FPM

Pneumatic features

Media	dry, lubricated or unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart
Flow rate	see chart, at 7 bar supply pressure and open outlet
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption



view from solder pin side

Electrical features

Supply voltage	24 V DC ± 10%
Electrical connection	M12x1, 5-pin plug, with coupling socket
Power consumption	12 W at nominal size 4, 40 W at nominal size 8
Current consumption	850 mA at nominal size 4, 1640 mA at nominal size 8
Command signal	0-10 V, 0-20 mA, 4-20 mA
Impedance	100 kΩ at voltage signal (0.1 mA current consumption) 500 Ω at current signal
Feedback output	0-10 V = 3 bar only, 6 bar and 10 bar pressure range possible

pin	description	5-wire cable (2m)
1	24 V supply voltage	brown
2	analog input signal	white
3	supply ground	blue
	analog ground	
4	analog outlet signal	black
5	digital pressure switch signal	grey
housing	EMC shield	shield

Accuracy

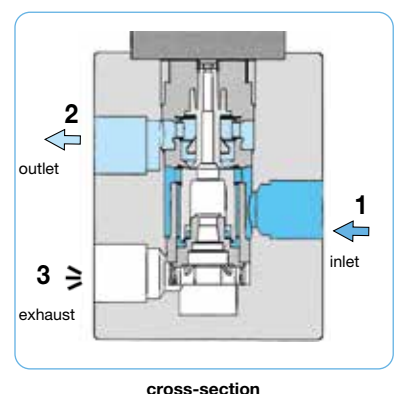
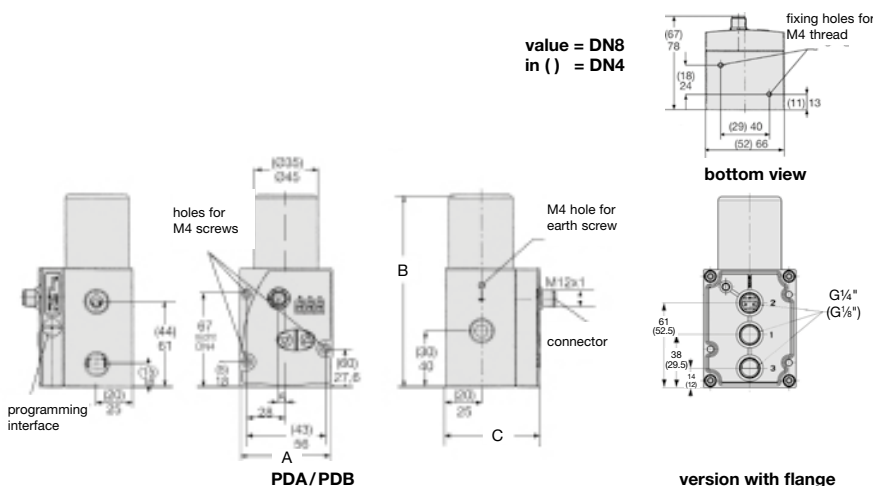
Linearity/Hysteresis	< 1,0% FS	Response sensitivity	< 0,5% FS
Repeatability	< 0,5% FS	Minimum setpoint	100 mV (0.2 mA / 4.2 mA)
Minimum outlet pressure	1% FS	Over all accuracy	± 0,5% FS

Adjustment and parameter settings

Zero point / range	Zero point and range can be calibrated percentage-wise.
Control mode / Amplification	Through the software different control modes may be chosen. All parameters of P/Pi/PID controllers can be tuned.
Diagnosis	A diagnostic tool including data recording is available within the software.
Characteristic curve	Increasing or decreasing curve can be set (increasing by standard).

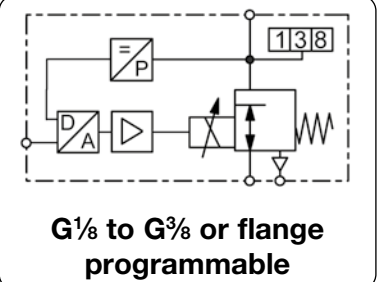


value = DN8
in () = DN4



cross-section

Description	The proportional pressure regulator is digitally controlled and works as a 3/2 valve with proportional magnet and closed loop. The digital control system offers advantages at installation and commissioning for adapting the valve to special applications. The regulator can be set and optimised using a PC, PR adapter and software.		
Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases		
Supply voltage	24 V DC ± 10 V, residual ripple < 10%		
Signal range	0-10 V, 100 kΩ impedance, 0/4-20 mA, 250 Ω impedance		
Electrical connection	plug M12x1, 5-pin, with coupling socket	Pressure switch	PNP, adjustable ± 5% from setpoint
Power consumption	21 W at DN4, 40 W at DN8	Repeatability	< 0.5% FS
Linearity/Hysteresis	< 0.5% FS / < 1% FS	Protection class	IP65
Mounting position	any	ambient:	0 °C to 50 °C / 32 °F to 122 °F
Temperature range	fluid: 0 °C to 60 °C / 32 °F to 140 °F	Inner valve:	POM
Material	Body: aluminium Elastomer: NBR/Buna-N		



Dimensions			Nominal size	Flow rate	Supply max.	Connection thread	Pressure range	Order number
A	B	C	DN	l/min*	bar	G	bar	
mm	mm	mm						

Proportional pressure regulator							0-10 V input and outlet signal, supply 24 V DC, without display, with coupling socket	PD
52	112	67	4	0.43	470	6	G1/8	0 ... 1 PDA41-010
						6		0 ... 3 PDA41-030
						9		0 ... 5 PDA41-050
						9		0 ... 6 PDA41-060
						13		0 ... 8 PDA41-080
						13		0 ... 10 PDA41-100
						13		0 ... 12 PDA41-120
						6	G1/4	0 ... 1 PDA42-010
						6		0 ... 3 PDA42-030
						9		0 ... 5 PDA42-050
						9		0 ... 6 PDA42-060
						13		0 ... 8 PDA42-080
						13		0 ... 10 PDA42-100
						13		0 ... 12 PDA42-120
66	138	78	8	1.2	1300	6	G1/4	0 ... 1 PDA82-010
						6		0 ... 3 PDA82-030
						9		0 ... 5 PDA82-050
						9		0 ... 6 PDA82-060
						13		0 ... 8 PDA82-080
						13		0 ... 10 PDA82-100
						13		0 ... 12 PDA82-120
						6	G3/8	0 ... 1 PDA83-010
						6		0 ... 3 PDA83-030
						9		0 ... 5 PDA83-050
						9		0 ... 6 PDA83-060
						13		0 ... 8 PDA83-080
						13		0 ... 10 PDA83-100
						13		0 ... 12 PDA83-120



PDA without display



PDB with display



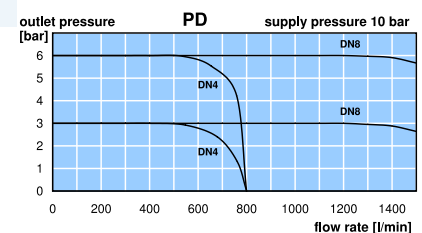
programming via PC

Special options, add the appropriate letter or number

display	3-digit, red	PDB.
NPT	connection thread	PD N
0-20 mA	setpoint input and monitor signal	PD 1
4-20 mA	setpoint input and monitor signal	PD 2
flange version		PD . . F . . .
cascade regulation	w/o monitor signal 2. sensor, electr. feedback 0-10 V	PD KU
	w/o monitor signal 2. sensor, electr. feedback 4-20 mA	PD KI

Accessories, enclosed

PR adapter	with USB plug and 1 m cable	PDUSB
software	basic version "light"	PDSOFT1 ^{1,2}
coupling socket	M12x1, 5-pin, with 2 m cable, 5 x 0.25 angular	KM12-C5-2
	5 m cable, 5 x 0.25 angular	KM12-C5-5



*1 at 6 bar supply pressure and 5 bar outlet pressure
*2 You do not need any software to use the valve!

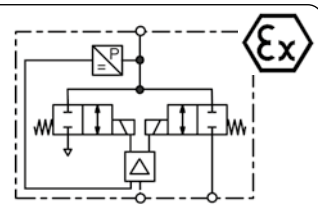
Technical details: see previous page

PDF CAD
www.aircom.net



Order example:
PDA41-010

Description	Piezo-operated proportional pressure regulator with closed loop in a two-wire system. Outlet pressure is proportional to an electrical input signal. The valve can be mounted in any position and is immune to shock or vibration. It is pilot-controlled to reach a higher flow rate.		
Media	lubricated or unlubricated and 50 µm filtered compressed air or non-corrosive gases		
Supply voltage	not necessary due to two-wire system (supply through 4...20 mA command signal)		
Electrical connector	coupling socket, 4-pin according to DIN 43651, size 15 x 15 mm connector turnable in 90° steps		
ATEX classification	Compliance with directive 2014/34/EU for use in potentially explosive atmosphere of group IIC, temperature classification T4.		
Power consumption	< 200 mW	Ignition protection type:	II1G Ex ia IIC T4; II1D Ex D20 T135°C
Linearity/Hysteresis	< 1 % FS	Fail-safe feature	exhaust at power breakdown
Mounting position	any	Repeatability	< 0.5 % FS
Air consumption	The pilot valve has an air consumption of 1.6 l/min		
Temperature range	Media: 0 °C to 60 °C / 32 °F to 140 °F	Protection class	IP 65
Material	Body: aluminium and plastic	Ambient:	0 °C to 60 °C / 32 °F to 140 °F
	Inner valve: stainless steel and plastic	Elastomer:	NBR/Buna-N and FKM



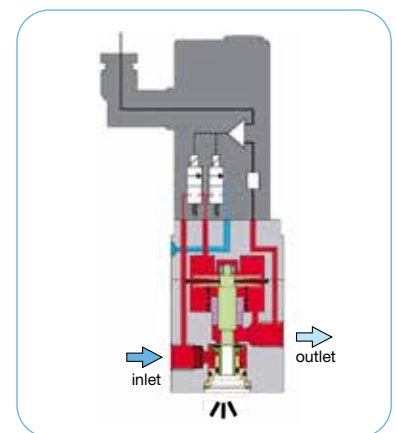
G¹/₈, accurate to 1% with constant bleed

Dimensions			Nominal size	K _v -value	Flow rate	Supply min./max.	Connection thread	Pressure range	Order number
A	B	C	DN	(m³/h)	l/min*1	bar	G	bar	
mm	mm	mm							

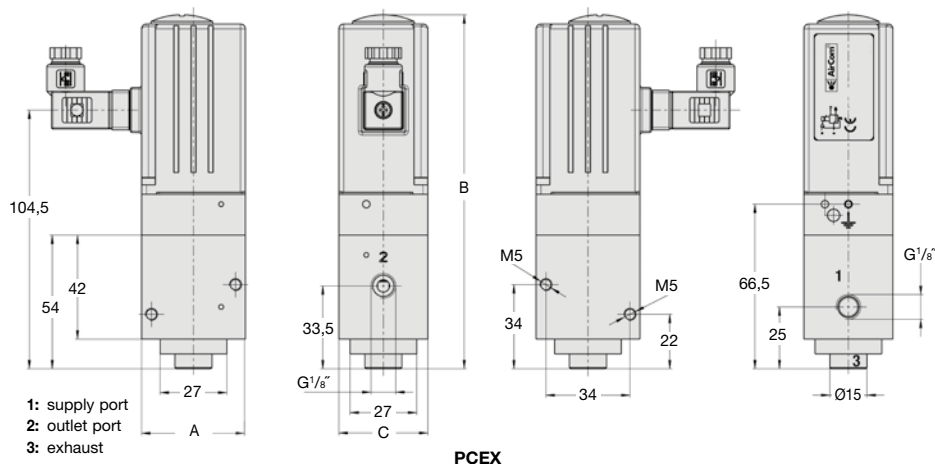
Proportional pressure regulator									4-20 mA input signal, ATEX with coupling socket, with constant bleed	PCEX
42	143	36	4	0.5	550	2.5 / 3.0	G ¹ / ₈	0 ... 2		PCEX-02
						3.5 / 5.0		0 ... 3		PCEX-03
						4.5 / 6.0		0 ... 4		PCEX-04
						5.5 / 8.0		0 ... 5		PCEX-05
						6.5 / 8.0		0 ... 6		PCEX-06



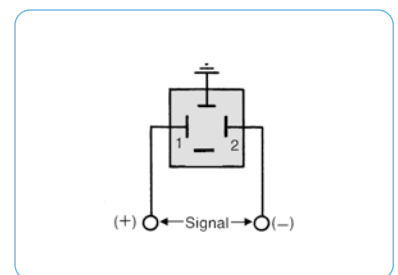
PCEX



cross-section



PCEX



connection diagram

*1 at 6 bar supply pressure, 5 bar outlet pressure, equal exhaust forward flow

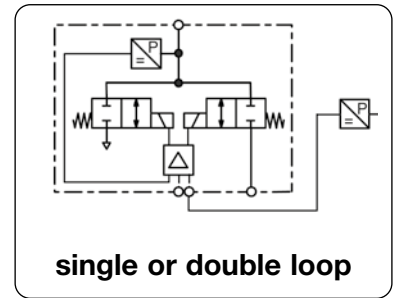
* Product group

PDF CAD
www.aircom.net



Order example:
PCEX-02

Description	Proportional pressure regulator with closed loop control technology for better control of pressurised gases. The instrument can be built as single closed loop or dual closed loop control valve. dry, lubricated or unlubricated and 20 µm filtered compressed air or non-corrosive gases constant outlet pressure at voltage drop		
Media	0-10 V, impedance 4.7 kΩ, ratio of internal to external relationship is 10% to 90%		
Fail freeze	15-24 V DC, residual ripple < 10%, with reverse voltage protection		
Second loop	0-10 V / 10 kΩ, 4-20 mA / 100 Ω		
Supply voltage	IP65		
Impedance	M12, 6-pin		
Protection class	24 W (985 mA) regulating, 2.4 W (100 mA) non-regulating		
Electrical connector	< 0.5% FS		
Power consumption	zero, span, hysteresis		
Linearity/Hysteresis	0 °C to 70 °C / 32 °F to 158 °F		
Adjustment	Ports: brass		
Temperature range	Transducer: silicon		
Material	Mounting position: any, vibration-resistant		
	Elastomer: FKM		
	Valves: stainless steel		



single or double loop

Dimensions			K _v -value	Flow rate	Supply pressure	Accuracy	Connection thread	Pressure range	Order number	
A	B	C	(m³/h)	l/min*1	max. bar	%	G	bar		E*
mm	mm	mm								

Proportional pressure regulator									0-10 V input and monitor signal, w. coupling socket supply voltage 24 V DC, single loop	PQH1
76	122	15	0.016	280	75	0.5	G $\frac{1}{8}$	0 ... 40		PQH1EE-40
								0 ... 50		PQH1EE-50
								0 ... 60		PQH1EE-60
								0 ... 70		PQH1EE-70

Proportional pressure regulator									0-10 V input, monitor- and feedback signal, with coupling socket, supply volt. 24 V DC, double loop	PQH2
76	122	15	0.016	280	75	0.5	G $\frac{1}{8}$	0 ... 40		PQH2EE-40
								0 ... 50		PQH2EE-50
								0 ... 60		PQH2EE-60
								0 ... 70		PQH2EE-70



PQH1

Special options, add the appropriate letter or number

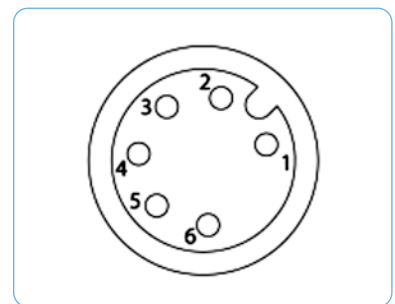
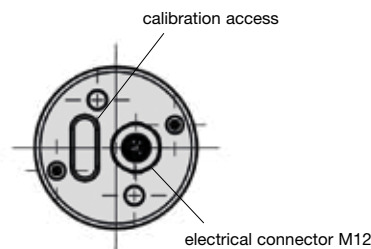
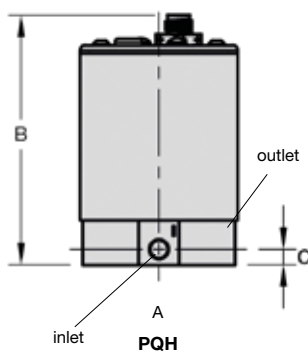
4-20 mA	input and feedback signal	PQH . IC- ..
for oxygen		PQH15
stainless steel manifold		PQHSS

Pneumatic connections

I: inlet
O: outlet
E: exhaust

LED status

LED red: supply voltage
LED green: setpoint/input value equal



view from solder pin side

Pin	Description
1	TTL output
2	set point +
3	set point ground
4	supply 24V DC
5	supply earth
6	analogue output signal

connection plan

*1 at 70 bar supply pressure and open outlet

For further details about double loop see end of the chapter

PDF CAD
www.aircom.net

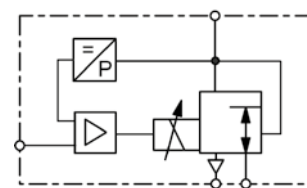
* Product group



Order example:
PQH1EE-40

Technical features

• Pressure range	0...30 bar to 0...80 bar	• Linearity / Hysteresis	± 3% FS
• Command signal	0-10 V, 0-20 mA, 4-20 mA	• Response sensitivity	± 3% FS
• Output signal	0-10 V, 0-20 mA, 4-20 mA	• Repeatability	± 3% FS
• Regulating time	< 1 s	• Protection class	IP65
• Flow rate	40 l/min	• Relief capacity	full nominal size



G $\frac{1}{4}$
0 ... 30 / 80 bar

General technical features

Design	3-port/2-way valve with proportional magnet and digital control
Mounting position	any, preferably upright
Protection class	IP65 with mounted coupling socket
Temperature range	0 °C to 60 °C / 32 °F to 140 °F, media- and ambient temperature
Material	Body: aluminium Inner valve: stainless steel Seals: FPM, NBR/Buna-N, TPS

Pneumatic features

Media	dry, lubricated, unlubricated and 50 µm filtered compressed air or non-corrosive gases
Supply pressure	see chart
Flow rate	up to 40 l/min, at 6 bar supply pressure and 5 bar outlet
Nominal size	DN 1.0, DN 1.2
Exhaust	same nominal size as on inlet valve, thus same relief capacity
Air consumption	without air consumption

Electrical features

Supply voltage	24 V DC ± 10%
Electrical connector	M12, 5-pin, with coupling socket
Power consumption	max. 24 W
Current consumption	max. 1000 mA
Command Signal	0-10 V, 0-20 mA, 4-20 mA
Impedance	100 kΩ at voltage signal 250 Ω at current signal
Feedback signal	0-10 V, 0-20 mA, 4-20 mA
Pressure switch	adjustable via software

Accuracy

Linearity / Hysteresis	± 3% FS
Response sensitivity	± 3% FS
Regulating time	< 1 s
Repeatability	± 3% FS
Over all accuracy	± 3% FS

Adjustment

Zero point	The zero point and the end value can be changed in %
Types of regulation/reinforcement	Different types of regulation can be set in the software. P, PI and PID valves can be changed with all individual parameters.
Diagnosis	A diagnostic tool is available in the software.
Characteristic curve	The characteristic curve can be adjusted upwards and downwards, the standard is upwards.

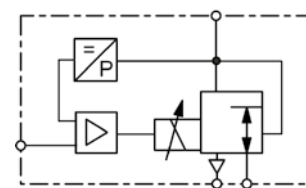


Description

The 3-port/2-way proportional high-pressure valve regulates the output pressure proportionally to the electrical input signal in a closed loop. The output pressure is transformed into an electrical signal and compared to the command signal. If the output pressure rises above the pre-selected set point as a result of a pressure increase the valve exhausts to the desired pressure. The digital control system offers the advantage of a quick adjustment of the control parameters during installation or commissioning. The valve does not consume air. At absence of input signal or supply voltage the valve exhausts.

Software

Visualization: Set point, outlet pressure, control parameters, Pressure switch signal
 Scope Function: Swing-in behaviour can be recorded and read immediately.
 Data can be accessed.
 Parameterization: Setpoint, zero point, control limit, ramp function
 Valve diagnostics: Custom or factory-specific setting. Optimization of the controller.



G $\frac{1}{4}$
0 ... 30 / 80 bar

Dimensions			Nenn- weite	K _v - value	Flow rate	Supply pressure	Connection thread	Pressure range	Order number
A	B	C	DN	(m ³ /h)	l/min ¹	max. bar	G	bar	E*
mm	mm	mm							

Proportional pressure regulator						0-10 V input signal, Supply 24 V DC, with coupling socket		PHP	
72	105	52	1.0	0.035	40	40	G $\frac{1}{4}$	0 ... 30	PHP00-3000
						50		0 ... 40	PHP00-4000
						60		0 ... 50	PHP00-5000
						70		0 ... 60	PHP00-6000
						80		0 ... 70	PHP00-7000
						90		0 ... 80	PHP00-8000



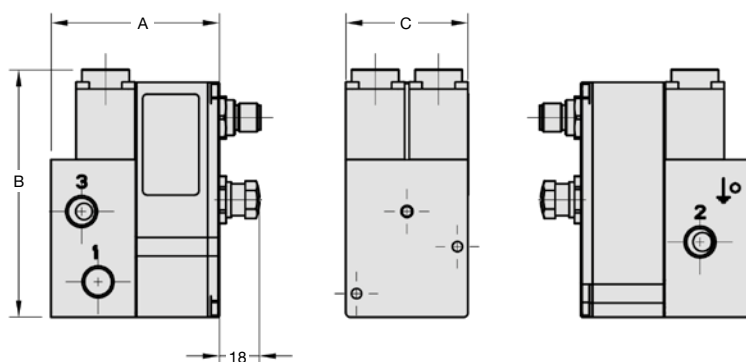
PHP

Special options, appropriate letter or number

setpoint input	0-20 mA	PHP. 1-
	4-20 mA	PHP. 2-
feedback output	0-10 V	PHP1.-
	0-20 mA	PHP2.-
	4-20 mA	PHP3.-
nominal size DN1,2	K _v value 0.048, V=54 l/min	to PHP...-5000 PHP. .-...X101

Accessories, enclosed

PR module	USB programming module with 1 m cable	PHPUSB
Software	Basic version "Light"	PHPSOFT1 ²
coupling socket	M12x1, 5-pin with 2 m cable, 5 x 0.25 angular	KM12-C5-2

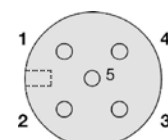


- 1: supply port
- 2: outlet port
- 3: exhaust

PHP

*1 at 6 bar supply pressure and 5 bar outlet pressure

*2 You do not need any software to use the valve!



view from solder pin side

Pin	Description
1	supply voltage
2	input signal
3	Power supply negativ
4	feedback signal
5	pressure switch
Body	emc shielding

Connection plan

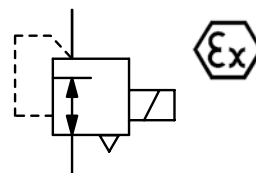
* Product group

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Order example:
 PHP00-3000

Description	The proportional pressure regulator translates a direct current or voltage input signal into a proportional pneumatic outlet signal. The valve uses proven moving coil and flapper nozzle technology with a built-in pneumatic relay with slight amplification and positive bias. Additional supply voltage is not necessary. The device has to be protected against vibration.	
Media	5 µm filtered compressed air or non-corrosive gases	
Supply voltage	not required	
Electrical connector	plug according to DIN 43650A, contact gap 18 mm, 3-pin, with coupling socket 30 x 30 mm	
Command signal	0 ... 10 V / 1.1 kΩ at PT6...-B, otherwise 900 Ω	4 ... 20 mA / 200 Ω at PT6...-B, otherwise 260 Ω
Failsafe	exhaust at power breakdown	
Linearity	< 0.5 % FS at 0.2...2 bar, otherwise < 1% FS	
Hysteresis	< 0.25% FS at 0.2...2 bar, otherwise < 1% FS	
Adjustment	Zero point: by 0.3 bar Range: 40% FS	
Temperature range	-30 °C to 65 °C / -22 °F to 149 °F	
Material	Body: chromated aluminium Nozzle: sapphire in nickel-plated brass plate	
	Response sensitivity	< 0.2% FS
	Repeatability	< 0.1% FS
	Vibration sensitivity	< 2% FS, for 10 g and 15 ... 500 Hz
	Mounting position	upright ± 15°
	Protection class	IP 65
	Elastomer	NBR/Buna-N
	Inner valve	stainless steel, brass, zinc-plated steel



accurate 0.5% or 1%

Dimensions			Flow rate	Supply pressure	Command signal	Pressure range	Order number	E*
A	B	C						
mm	mm	mm	l/min*1	max. bar	V/mA	bar		

Proportional pressure regulator 0-10 V							1/4" NPT, depending on pressure range air consumption 2...8 l/min	PT600
57	93	13	250	8	0-10 V	0.2 ... 1		PT600-B100
						0.2 ... 2		PT600-B200
57	132	13	300	10	0-10 V	0 ... 2		PT600-0200
						0 ... 4		PT600-0400
						0 ... 8		PT600-0800

Proportional pressure regulator 4-20 mA							1/4" NPT, depending on pressure range air consumption 2...8 l/min	PT602
57	93	13	250	8	4-20 mA	0.2 ... 1		PT602-B100
						0.2 ... 2		PT602-B200
57	132	13	300	10	4-20 mA	0 ... 2		PT602-0200
						0 ... 4		PT602-0400
						0 ... 8		PT602-0800

Special options, change the appropriate number

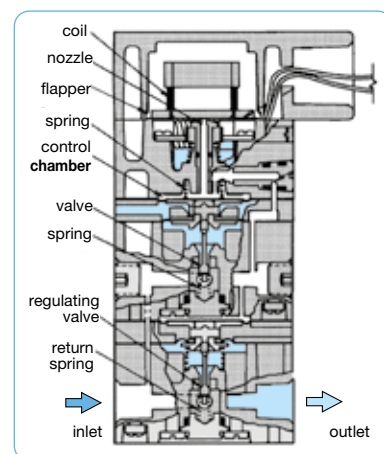
Ex-i-Atex	Atex II 1G Ex ia IIC T4	4-20 mA only	PT602-...01
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Accessories, enclosed

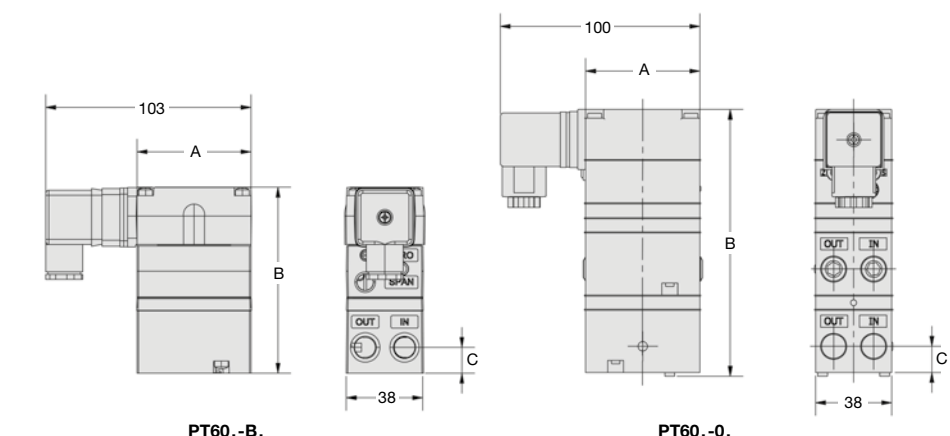
mounting bracket	made of steel, for standard version	SA-PT1
	made of steel, for Din rail	SA-PT2
isolate transmitter	Ex ia II C, E/A: 0-20 mA, 24 V DC, EX 1-32	KFD2-CD



PT60.-0.



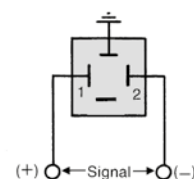
cross-section



PT60.-B.

PT60.-0.

*1 at 7 bar supply pressure and 1.4 bar outlet pressure



connection diagram

* Product group

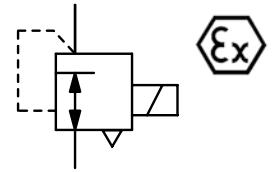


Order example:
PT600-B100

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PROPORTIONAL PRESSURE REGULATOR WITH PIEZO ELEMENT AND ELECTRICAL FEEDBACK PT7

Description	The proportional pressure regulator translates a direct current or voltage signal into a linear proportional pneumatic outlet signal. With rapid response controls using low-powered piezo microelectronics, flapper nozzle and solid state control circuit. The proportional pressure regulator has internal electronic with an electrical feedback sensor and is housed in NEMA4X (IP65) enclosure with six outlet ranges, jumper selectable. Input and outlet ports on both ends of the body simplify pneumatic piping.		
Media	5 µm filtered compressed air or non-corrosive gases		
Supply voltage	7...30 V DC, 90 mW, required for 0...10 V setpoint input only, with reverse voltage protection		
Electrical connector	plug according to DIN 43650A, contact gap 18 mm, 3-pin, with coupling socket 30 x 30 mm		
Command signal	0...10 V / 10 kΩ, 3-pin, 24 V DC supply voltage, 4...20 mA / 330 Ω, two-wire, min. 7 V DC on input		
Failsafe	exhaust at power breakdown		
Linearity	< 0.25% FS		
Hysteresis	< 0.1% FS at 0.2...0.5 bar, otherwise < 0.25% FS		
Adjustment	Zero point: by 0.3 bar Range: 40% FS		
Temperature range	-40 °C to 70 °C / -40 °F to 158 °F		
Material	Body: chromated aluminium Nozzle: sapphire in nickel-plated brass plate		
	Response sensitivity	< 0.2% FS	
	Repeatability	< 0.1% FS	
	Vibration sensitivity	< 1% FS, for 10 g and 15...500 Hz	
	Mounting position	any	
	Protection class	IP 65	
	Elastomer:	NBR/Buna-N	
	Inner valve:	stainless steel, brass, zinc-plated steel	



**accurate to 0.25%
piezo-controlled**

Dimensions			Flow rate	Supply pressure	Command signal	Pressure range	Order number	E*
A	B	C						
mm	mm	mm	l/min*1	max. bar	V/mA	bar		

Proportional pressure regulator 0-10 V $\frac{1}{4}$ " NPT, air consumption 2...8 l/min subject to pressure range							PT780
57	95	13	250	8	0-10 V	0.2...1	PT780-B100
						0.2...2	PT780-B200
57	133	13	300	10	0-10 V	0...2	PT780-0200
						0...4	PT780-0400
						0...8	PT780-0800

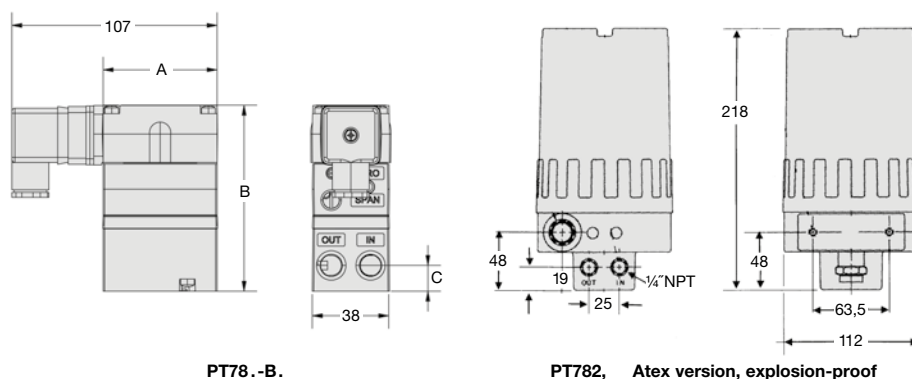
Proportional pressure regulator 4-20 mA $\frac{1}{4}$ " NPT, air consumption 2...8 l/min subject to pressure range							PT782
57	95	13	250	8	4-20 mA	0.2...1	PT782-B100
						0.2...2	PT782-B200
57	133	13	300	10	4-20 mA	0...2	PT782-0200
						0...4	PT782-0400
						0...8	PT782-0800

Special options, change the appropriate number

-i-Atex	Atex II 1G Ex ia IIB T4	4-20 mA only	PT782-...01
-d-Atex	Atex ds IIC T6	max. 2 bar	4-20 mA only PT782-...0E

Accessories, enclosed

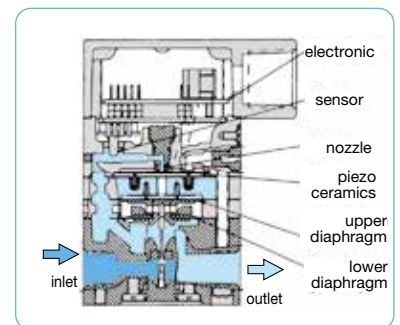
mounting bracket	made of steel, for standard version	SA-PT1
	made of steel, for DIN rail	SA-PT2
mounting clip	made of steel, Atex version, explosion-proof	SA-PT3
isolate transmitter	Ex ia II C E/A: 0...20 mA, 24 V DC, EX 1-32	KFD2-CD



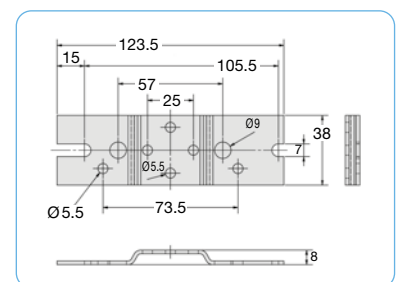
*1 at 7 bar supply pressure and 1.4 bar outlet pressure



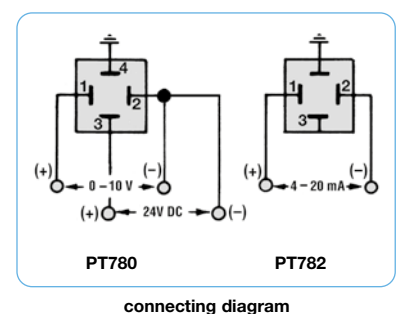
PT78.-0.



cross-section



SA-PT1



connecting diagram

* Product group

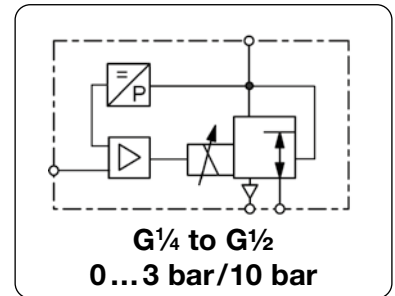
PDF CAD
www.aircom.net



Order example:
PT780-B100

Proport.
pressure
10

Description	The pneumatic proportional pressure regulator controls the outlet pressure in a complete closed loop servo system in proportion to an digital IO-Link command signal. By using the IO-Link Master the valve can be adapted to special applications and optimize the the response time, the overshoot and the precision of the valve. The valve has no constant bleed. At absence of input signal or supply voltage the pressure of the valve stands.		
Media	dry, lubricated, unlubricated and 50 µm filtered compr. air or non-corrosive gases		
Command signal	Digital command signal in 1mbar steps (0-10000 = 0-10 bar)		
Hysteresis	1,5% FS	Supply voltage 24 VDC	Control IO-Link (Class A)
Linearity	1,5% FS	Electrical connector M12, 5-pin	Software: IODD (necessary)
Repeatability	1,5% FS	Protection class IP65	
Minimum Command signal	0,5% FS	Current consumption 180 mA	
Minimum Outlet Pressure	1,0% FS	Power consumption 3,8 W (< 1W if regulated)	
Temperature range	0-60 °C Media and Ambient		
Material	Body: aluminium Inner valve: POM (Polyacetal)		
Mounting position	any, preferably perpendicular		
			Elastomer: NBR



Dimensions			K _v -value	Flow rate		Supply pressure	Connection thread	Pressure range	Order number	E*
A	B	C		(m ³ /h)	l/min					
mm	mm	mm	(m ³ /h)	(m ³ /h)	l/min	bar ⁻¹	G	bar		

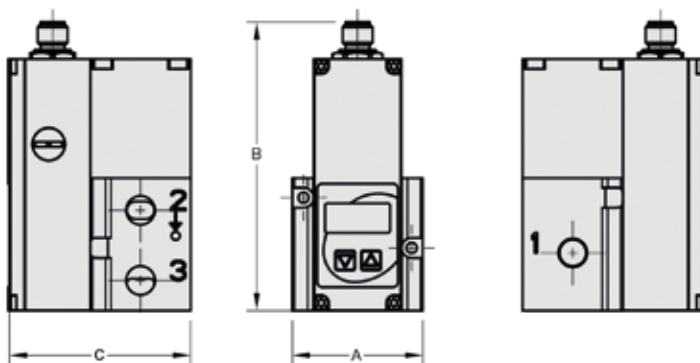
Proportional pressure regulator							Supply 24 V DC via IO-Link master without coupling socket		PIO	
52	115	73	0.43	28,2	470	4	G $\frac{1}{4}$	0... 3	PIO2-03	
						7	G $\frac{1}{4}$	0... 6	PIO2-06	
						11	G $\frac{1}{4}$	0... 10	PIO2-10	
66	129	89	1.2	78	1300	4	G $\frac{3}{8}$	0... 3	PIO3-03	
						7	G $\frac{3}{8}$	0... 6	PIO3-06	
						11	G $\frac{3}{8}$	0... 10	PIO3-10	
66	144	102	4.8	312	5200	4	G $\frac{1}{2}$	0... 3	PIO4-03	
						7	G $\frac{1}{2}$	0... 6	PIO4-06	
						11	G $\frac{1}{2}$	0... 10	PIO4-10	



PIO

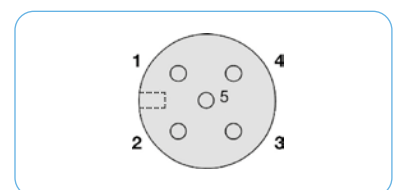
Special options, add the appropriate letter or number

Display	PIO-... B
for oxygen	PIO-... 15



- 1: inlet
2: outlet
3: exhaust

PIO



view from solder pin side

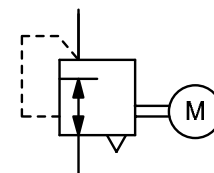
Pin	Description
1	24V supply voltage
2	not occupied
3	supply ground
4	C/Q
5	not occupied
Housing	EMC shield

connection plan

*1 To use the valve, you need the IODD
P1 = at least 1 bar higher than the maximum outlet pressure

* Product group

Description	Motorised air pressure regulator designed for precise pneumatic control using an electrical signal from a remote location. A slip clutch prevents from motor damages at overload or end position limitations.		
Media	dry, oil-free and 5 µm filtered compressed air or non-corrosive		
Operation	With no electrical power the regulator maintains a precise setpoint despite variable supply pressure and flow rates. When power is applied to the motor the pressure outlet changes.		
Power consumption	6 W		
Control signal	24 V DC		
Electrical connector	4 single wires, optionally plug according to DIN 43650A, contact gap 18 mm, 3-pin with coupling socket		
Accuracy	at varying supply pressures: max. 2.3 l/min, subject to outlet pressure, < 1% of volume flow		
Air consumption	relieving		
Relieving function	140 l/min at 1.5 bar outlet and 0.35 bar overpressure above setpoint,		
Relief capacity	1/4" NPT on both sides of the body		
Gauge port	Body: zinc die-cast		
Material	Inner valve: stainless steel and brass		
	Mounting position	any, preferably upright	
	Temperature range	-18 °C to 60 °C / 0 °F to 140 °F	
	Elastomer:	NBR/Buna-N	
	Mounting bracket:	black-coated steel	



1/4" NPT, 280 l/min

Dimensions	Power	Flow	Switching	Connection	Pressure	Order
A B C	consumption	rate	time	thread	range	number
mm mm mm	W	l/min*1	s	NPT	bar	

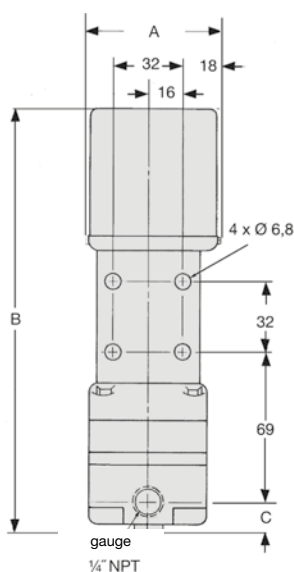
Motorised pressure regulator						P ₁ max. 10 bar, relieving, with constant bleed, control signal 24 V AC, 6 rpm	P180
62	195	14	6	280	40	1/4" NPT	0.14 ... 1.8
					30		0.14 ... 4.0
					50		0.14 ... 8.0
							P180-02AV
							P180-02BV
							P180-02CV

Special options, add the appropriate letter

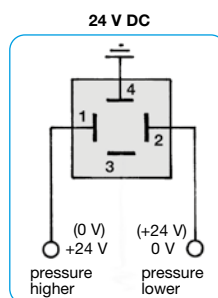
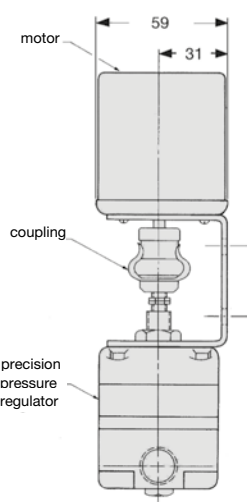
higher exhaust	two times greater than standard	P180-02 . H
DIN connector	connection with DIN plug 30x30 mm	P180-02 . D

Accessories, enclosed

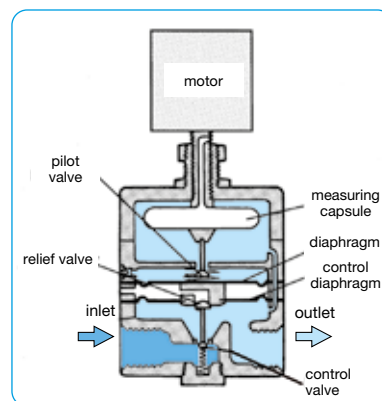
pressure gauge	Ø 50 mm, 0 ... *2 bar, G1/4, connecting parts necessary	MA5002-..*2
gauge connecting parts	adapter 1/4" NPT - R1/4 f	VP-0202N



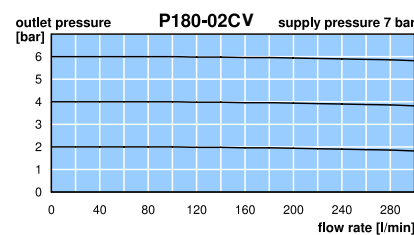
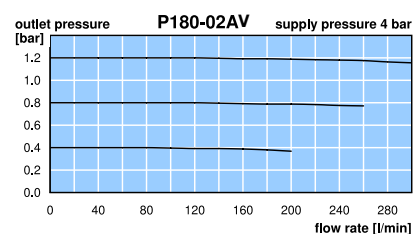
P180



P180



cross-section



*1 at 7 bar supply pressure and 6 bar outlet pressure
*2 02 = 0 ... 2.5 bar, 06 = 0 ... 6 bar, 10 = 0 ... 10 bar

Description

regulators.

The series line of potentiometers are designed for use as a command signal for control pressure

A 10 volt reference is used to provide excitation to the potentiometer. An op-amp measures the output on the wiper of the potentiometer and provides buffering to eliminate external components from affecting the linearity of the potentiometer.

A three wire cord is provided and is attached to the pc board to make necessary power signal and common connections

Field of application

0-10 V version PPB-U is compatible with all proportional pressure regulators.

4-20 mA version PPB-I is compatible with all pressure regulators of Series PQ and PM.

For all other pressure regulators, e.g Series PP, PR, PRE, a setpoint of 4.1 ... 18.5 mA is generated.

Measuring range

0 ... 999

Supply voltage

15 - 24 V DC

Current consumption

max. 30 mA

Linearity/Hysteresis

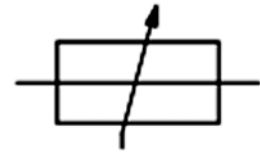
± 0.25% FS

Mounting position

any

Temperature range

0 °C to 70 °C / 32 °F to 158 °F



with 10-turn-potentiometer

Dimensions

F H G
mm mm mm

Output

signal
V / mA

Order

number



Setpoint Potentiometer

supply voltage 15 - 24 V DC

PPB

85 55 40

0-10 V

PPB-U

85 55 40

4-20 mA

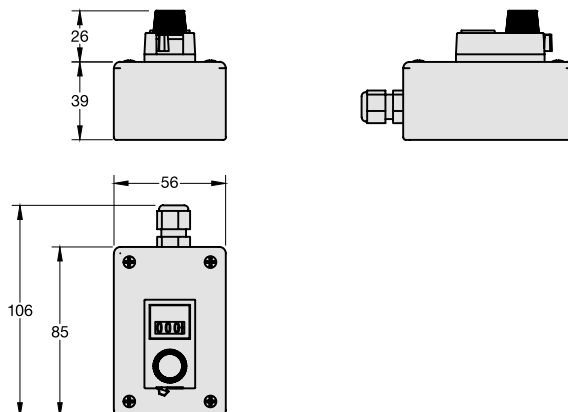
PPB-I



PPB-U



PPB-I



PPB

Pin	Description	3-pin cable
1	voltage supply 24V DC	black
2	analogue setpoint	white
3	supply earth	green

connecting plan

* Product group



Order example:
PPB-U

PDF CAD
www.aircom.net

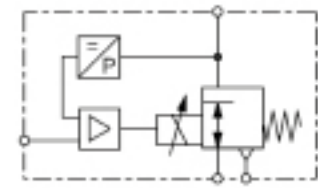
VOLUME BOOSTER-PROPORTIONAL PRESS. REGL.-COMBINATIONS

What are volume booster / proportional pressure regulator combinations used for?

Combinations of volume boosters and proportional pressure regulator lend themselves for electronically regulating high volume flows. On the one hand common proportional pressure regulator are not available with connection sizes big enough, on the other hand combinations are in most cases more economic. There are two ways of regulating: Single loop systems are suitable for standard applications without high requirements for accuracy and without consideration of pressure drop at high flow. Double loop regulations on the contrary are much more accurate and also qualified for dynamic processes.

General operational description:

The volume booster and proportional pressure regulator are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional pressure regulator and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.



G $\frac{1}{4}$ up to G3
compressed air or liquids

Single loop

At single loop combinations the pressure difference between command signal and outlet pressure is being ignored because the proportional pressure regulator only refers to its own outlet pressure within the pilot chamber. The outlet pressure performance is dependent of the volume booster's accuracy.

Double loop

Combinations with a second feedback have the possibility to balance pressure differences. For this a pressure transducer is installed in the outlet line of the booster. The electrical signal of the transducer is applied as a feedback signal onto the proportional pressure regulator. The proportional pressure regulator detects any pressure differences and compensates them automatically. In high flow applications a pressure drop at the outlet of the pilot regulator is thus minimised.

General features

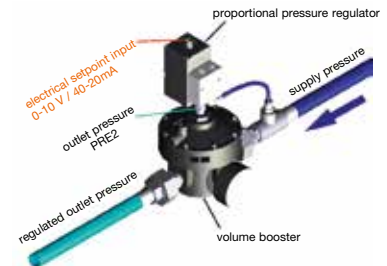
Construction type	The volume booster / proportional pressure regulator combinations are delivered completely assembled and calibrated.
Mounting position	preferred horizontal (see figure)
Protection class	IP 54 with ordinary coupling socket as standard, optionally IP 65 for some devices (see according product information sheets)
Temperature range	0 °C to 50 °C / 32 °F to 122 °F for all proportional pressure regulator, for booster ranges refer to according product sheets

Pneumatic features

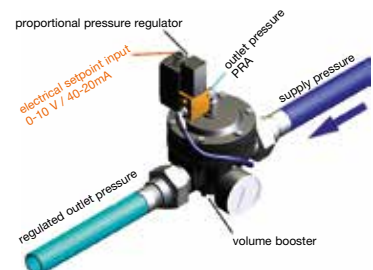
Command signal	The proportional pressure regulator may only be fed with dry and 5 µm filtered compressed air. The pneumatic command signal must always be air!
Media	Preferred dry, 5 µm filtered compressed air for supply of the proportional pressure regulator. The volume boosters can operate with air or non-corrosive gases, model R120 even with liquids. The respective air consumption and the relieving function strongly have to be regarded.
Inlet pressure	dependent of the according combination (see according product information sheets)
Pressure supply	The proportional pressure regulator has to be separately supplied with compressed air with regard to the valve's maximum inlet pressure.
Exhaust	The proportional pressure regulator exhausts only the booster's pilot chamber. The booster, if in relieving version, exhausts the volume of the supply pressure line. The relief capacity is subject to the differential pressure.
Volume flow	see specifications of the according volume booster

Electrical features

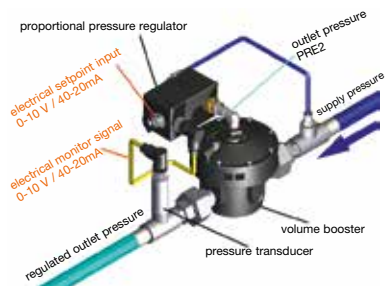
Supply voltage	All valves have to be supplied with 24 V DC.
Power consumption	see according product information sheets
Setpoint input	0-10 V as standard, optionally 4-20 mA for all valves
Monitor signal	A feedback signal is not reasonable for the single loop version because here only the pressure of the booster's pilot chamber is monitored. That value does not give any information about the outlet pressure behind the booster.



PRE2, R450 with single loop



PRA, R119 with single loop

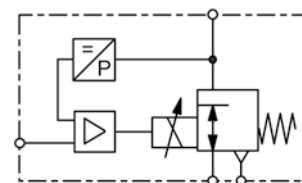


PQ2, R450 with double loop

General operational description:

The volume booster and proportional pressure regulator are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional pressure regulator and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.

At single loop combinations the pressure difference between command signal and outlet pressure is being ignored because the proportional pressure regulator only refers to its own outlet pressure within the pilot chamber. The outlet pressure performance is dependent of the volume booster's accuracy.



**G $\frac{1}{4}$ up to G3
compressed air or liquids**

Single loop combination examples

Flow rate l/min	Connection thread G	Outlet pressure bar	Part number Booster	Part number Prop.press.reg.	Order number of combination	E*
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R750 with PRE1, for compressed air or non-corrosive gases setpoint 0-10 V, P₁ max. 17 bar

1000	G $\frac{1}{4}$	0... 8	R750-02I	PRE1-U08	BP1U750-02	
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R450 with PRE1, for compressed air or non-corrosive gases setpoint 0-10 V, P₁ max. 17 bar

4000	G $\frac{1}{2}$	0... 8	R450-04I	PRE1-U08	BP1U450-04	
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R119 with PPA, for compressed air or non-corrosive gases setpoint 0-10 V, P₁ max. 21 bar

5600	G $\frac{1}{2}$	0... 10	R119-04J	PPA00-1000	BP1U119-04	
9000	G $\frac{3}{4}$	0... 10	R119-06J	PPA00-1000	BP1U119-06	
10000	G1	0... 10	R119-08J	PPA00-1000	BP1U119-08	
12000	G1 $\frac{1}{2}$	0... 10	R119-12J	PPA00-1000	BP1U119-12	
42000	G2	0... 10	R119-16J	PPA00-1000	BP1U119-16	
44000	G2 $\frac{1}{2}$	0... 10	R119-20J	PPA00-1000	BP1U119-20	
110000	G3	0... 10	R119-24J	PPA00-1000	BP1U119-24	

RGB4 with PRE1-A2, for compressed air or gases setpoint 0-10 V, P₁ max. 4 bar

700	G $\frac{1}{2}$	0...0,2	RGB4-04J	PRE1-UA2	BP1UGB4-04	
2800	G1	0...0,2	RGB4-08J	PRE1-UA2	BP1UGB4-08	
5600	G1 $\frac{1}{2}$	0...0,2	RGB4-12J	PRE1-UA2	BP1UGB4-12	

RZ1 with PRE1-.01/02, for compressed air or gases setpoint 0-10 V, P₁ max. 16 bar

2900	G1	0... 1	RZ3-08J	PRE1-U02	BP1UZ-08	
5700	G1 $\frac{1}{2}$	0... 1	RZ3-12J	PRE1-U02	BP1UZ-12	
21000	G2	0... 1	RZ2-16J	PRE1-U02	BP1UZ-16	

R120 with PPA, for compressed air, gases or liquids setpoint 0-10 V, P₁ max. 50 bar

1200	G $\frac{1}{2}$	0... 15	R120-04J2	PPA00-1600	BP1U120-04	
4200	G $\frac{3}{4}$	0... 15	R120-06J2	PPA00-1600	BP1U120-06	
5000	G1	0... 15	R120-08J2	PPA00-1600	BP1U120-08	
1200	G $\frac{1}{2}$	0... 50	R120-04J5	PP000-5000	BP1U120-04J5	
4200	G $\frac{3}{4}$	0... 50	R120-06J5	PP000-5000	BP1U120-06J5	
5000	G1	0... 50	R120-08J5	PP000-5000	BP1U120-08J5	
14000	G1 $\frac{1}{2}$	0... 50	R120-12J5	PP000-5000	BP1U120-12J5	
15000	G2	0... 50	R120-16J5	PP000-5000	BP1U120-16J5	

Special options, add the appropriate letter

4-20 mA	input signal	BP1I...-....
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BP1U750-02



BP1U119-16



BP1UZ-08



BP1U120-08J5

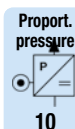
Gauges: see chapter for measuring devices
Further details: see chapter for single devices

PDF CAD
www.aircom.net

* Product group



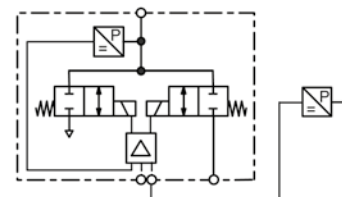
Order example:
BP1U750-02



General operational description:

The volume booster and proportional pressure regulator are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional pressure regulator and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.

Combinations with a second feedback have the possibility to balance pressure differences. For this a pressure transducer is installed in the outlet line of the booster. The electrical signal of the transducer is applied as a feedback signal onto the proportional pressure regulator. The pressure regulator detects any pressure differences and compensates them automatically. In high flow applications a pressure drop at the outlet of the pilot regulator is thus minimised.



G $\frac{1}{2}$ up to G2
compressed air or non-corrosive gases

Double loop combination example

Flow rate l/min	Connection thread G	Outlet pressure bar	Sensor	Part number Booster	Prop.press.reg.	Order number of combination	E*
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R450 with PQ2, for compressed air or non-corrosive gases

setpoint 0-10 V, P₁ max. 17 bar

4 000	G $\frac{1}{2}$	0... 1	DAV-01H	R450-04I	PQ2EE-01	BP2U450-0401
		0... 6	DAV-06H	R450-04I	PQ2EE-06	BP2U450-0406
		0...10	DAV-10H	R450-04I	PQ2EE-10	BP2U450-0410



BP2U450-0406

R200 with PQ2, for compressed air or non-corrosive gases

setpoint 0-10 V, P₁ max. 17 bar

28 000	G1	0... 1	DAV-01H	R200-08I	PQ2EE-01	BP2U200-0801
		0... 6	DAV-06H	R200-08I	PQ2EE-06	BP2U200-0806
		0...10	DAV-10H	R200-08I	PQ2EE-10	BP2U200-0810



BP2U200-0806

RGB4 with PQ2, for compressed air or gases

setpoint 0-10 V, P₁ max. 4 bar

700	G $\frac{1}{2}$	0...0.35	DAV-C4H	RGB4-04J	PQ2EE-C4	BP2UGB4-04
2 800	G1	0...0.35	DAV-C4H	RGB4-08J	PQ2EE-C4	BP2UGB4-08
5 600	G $\frac{1}{2}$	0...0.35	DAV-C4H	RGB4-12J	PQ2EE-C4	BP2UGB4-12



BP2UGB4-12

RZ1 with PQ2, for compressed air or gases

setpoint 0-10 V, P₁ max. 16 bar

2 900	G1	0...1	DAV-01H	RZ3-08J	PQ2EE-01	BP2UZ-08
5 700	G $\frac{1}{2}$	0...1	DAV-01H	RZ3-12J	PQ2EE-01	BP2UZ-12
21 000	G2	0...1	DAV-01H	RZ2-16J	PQ2EE-01	BP2UZ-16



BP2UZ-08

Special options, add the appropriate letter

4-20 mA input signal BP2I...-....

